



United States
Department of
Agriculture

Agricultural
Marketing
Service

Agricultural
Economic Report
Number 477

A281
9
A98A

A Review of Federal Marketing Orders for Fruits, Vegetables, and Specialty Crops

Economic Efficiency
and Welfare Implications

USDA
NAT'L AGRIC LIBRARY

2002 JAN 10 PM 5:59

EDUCATION
POLYMER
SERIALS

ABSTRACT

Marketing orders for fruits, vegetables, and specialty crops have potentials for increasing economic efficiency by stabilizing returns for growers, providing buyers quality assurance, and facilitating activities such as research and container standardization. But, by limiting quantities marketed in one or more outlets orders can impose inefficiencies on the industries affected and reduce consumer welfare. Twenty-four of the 47 Federal marketing orders for fruits, vegetables, and specialty crops provide for some form of direct regulation of the quantities of products marketed. Only some of these contain the stronger provisions, such as marketing allotments, market allocation, and season-long prorates, that are most likely to result in serious misallocation of resources. In recent years, the orders for hops and spearmint oil, California-Arizona navel oranges, valencia oranges, and lemons, and perhaps the walnut and filbert orders, seem to have been used in ways that result in significant resource misallocations. Losses from resource misallocation for the remaining orders appear relatively small. In most cases of quantity control, efficiency losses are offset to varying degrees by stabilization gains, although definitive estimates are not possible with currently available information.

Products marketed under all but 1 of the 47 orders are subject to order-imposed quality standards. Under many of these quality standards, the gains to buyers from improved quality assurance appear important compared to the losses from diverting some of the least desirable products to secondary uses or disposal. But here also, quantification of the benefits and costs is lacking.

Marketing policy options for fruits and vegetables include continuing marketing orders as they exist, eliminating marketing orders entirely, replacing them with other government marketing programs, and modifying order provisions and administration. Terminating Federal marketing orders would temporarily reduce incomes for many growers. Some would go out of business; incomes of those who remain would likely return to about the same levels as with orders in 3 to 10 years. Consumers' prices for some of the products covered by orders would also be temporarily lowered by terminating orders. In the long run, prices for any given commodity could be either higher or lower than under marketing orders, depending upon whether the losses from order-imposed misallocation of resources outweigh the gains from stabilization attained through the order. Possibilities exist for modifying order provisions or limiting their application to reduce the misallocation losses while achieving some of the benefits of stabilization and quality assurance. One such possibility is to move toward using the quantity regulation provisions primarily as "safety-valves," allowing regulation only during those years or occasions when supplies otherwise would be excessively burdensome, and leaving marketings unregulated at other times.

PREFACE

The Federal marketing order program for fruits, vegetables, nuts, and specialty crops is one of 27 regulatory programs designated for reassessment and possible modification in March 1981 by the President's Task Force on Regulatory Relief, headed by Vice President George Bush.^{1/} Secretary of Agriculture John R. Block named a team to review these marketing orders in May 1981. Team members include: Walter Armbruster, Associate Managing Director, Farm Foundation; Edward Jesse, Economist, Economic Research Service, USDA; Glenn Nelson, Professor of Agricultural and Applied Economics, University of Minnesota; Carl Shafer, Professor of Agricultural Economics, Texas A & M University; and Richard Heifner, Staff Economist, Agricultural Marketing Service, USDA, who served as team leader.

The charge to the review team was to "focus on the (marketing order) programs' effects on economic efficiency, costs, and productivity."^{2/} Special attention was to be given "to those regulations that enable agricultural industries to control quantities of commodities marketed through various means such as reserve pools, producer

allotments, rate-of-flow provisions and shipping holidays."^{3/} Policy options encompassing both legislative and administrative changes were to be defined and analyzed.

The review team invited and reviewed comments on marketing orders from the public. Team members met with producers, handlers, manufacturers, retailers, and consumer representatives in California, Florida, Oregon, Texas, and Washington. Previous studies made by people in government agencies, universities, and the private sector were extensively reviewed and drawn upon where applicable.

Advisors aiding the team throughout the study included: Charles Brader, Director of the Fruit and Vegetable Division, Agricultural Marketing Service, USDA; William Dobson, Senior Staff Economist, Council of Economic Advisors; Philip Eisenstat, Economist, Department of Justice; Olan Forker, Chairman, Department of Agricultural Economics, Cornell University; Marshall Godwin, Senior Analyst, Economic Research Service, USDA; Tom Lenard, Deputy Chief of Economic Regulation, Office of Management and Budget; Michael Mazur, Senior Economist, Office of Management and Budget; Ted Moriak, Program Analyst, Office of Budget and Program Analysis, USDA; Allen Paul, Senior Economist, Economic Research Service, USDA; Donald Ricks, Professor of Agricultural Economics, Michigan State University; and L. T. Wallace, Extension Economist on Policy and Research, University of California, Berkeley.

^{1/} Statement of the Vice President regarding actions taken by the President's Task Force on Regulatory Relief, March 25, 1981. The statement instructed that the agencies involved in the review would be guided by the regulatory principles set forth in Executive Order 12291, Federal Register, Vol. 46, No. 33, Feb. 19, 1981, pp. 13193-13195.

^{2/} Statement of the Vice President, op. cit.

^{3/} USDA News Release, "Block Appoints Five-Member Team to Review Marketing Orders", May 11, 1981.

Many persons in the Agricultural Marketing Service helped assemble information for the review. Shirley Sindelar coordinated preparation of the tables. Marc Warman assisted in writing, and Dale May edited the report. Frances Ricco handled a myriad of details required to conduct the review and typed the report.

This report represents the consensus of the review team on the issues addressed. Needless to say, however, the team members and advisors do not all hold identical views regarding every detail of the study.

Contents

	Page
Introduction	1
Evolution of Marketing Orders	3
Economic Rationale for Considering Governmental Actions	19
Provisions and Administration of Marketing Orders	21
Quality Control	21
Quantity Control	25
Market Support Activities	28
Order Administration	29
The Economic Effects of Marketing Orders	31
Economic Efficiency	33
Income Distribution	55
Entrepreneurial Independence	56
Number and Size of Farms	57
Summary of Marketing Order Effects	57
Impacts of Selected Policy Options	60
Maintain Current Marketing Order Program	61
Eliminate Federal Marketing Orders Program Alternatives to Marketing Orders	61
Selected Changes in Marketing Order Provisions	69
73	
Summary	81
Appendix A: Welfare Effects of Quantity Regulation	87
Appendix B: Annotated Bibliography	105

November 1981

List of Tables

Table no.		Page
1	Mean yield and yield variability for selected citrus fruits under marketing orders, 1939-1949 and 1969-79.	6
2	Mean yield and yield variability for selected vegetables under marketing orders, 1939-1949 and 1969-79.	7
3	U.S. production of fruits and vegetables for fresh tree nuts, hops and spearmint oil, decade averages 1940-49 to 1970-79.	8
4	Mean and variability of season-average grower prices for fruits under marketing orders, 1970-71 to 1979-80.	9
5	Mean and variability of season-average grower prices for vegetables under marketing orders, 1970-71 to 1979-80.	11
6	Mean and variability of season-average grower prices for specialty crops under marketing orders, 1970-71 to 1979-80.	12
7	Estimated number of commercial producers for commodities covered by marketing orders, 5-year intervals, 1965-1980.	14
8	Estimated number of handlers for commodities covered by marketing orders, 5-year intervals, 1965-1980.	16
9	Numbers of Federal marketing order and agreement programs in effect on Jan. 1, by decade 1940-80 and 1981.	18
10	Quality and quantity control provisions of Federal marketing orders for fruits, vegetables, and specialty crops, July 1, 1981.	22
11	Market allocation orders, restricted and unrestricted volume, 1960-61 to 1980-81.	35
12	Producer allotment orders, total allotments, and total sales, 1960-1980.	40

List of Tables

Table no.		Page
13	Reserve pools under Federal marketing orders for California dried prunes, 1960-61 to 1980-81.	42
14	Reserve pools under Federal marketing orders for tart cherries, 1971-72 to 1980-81.	43
15	Assessments and expenditures, citrus fruit marketing orders, 1979-80.	48
16	Assessments and expenditures, noncitrus fruit marketing orders, 1979-80.	49
17	Assessments and expenditures, vegetable marketing orders, 1979-80.	51
18	Assessments and expenditures, specialty crops marketing orders, 1979-80.	52
19	Inspection costs for selected commodities under marketing orders, 1980-81 crop.	54

INTRODUCTION

Marketing orders are of vital interest to the growers and handlers of fruits, vegetables, and speciality crops in the United States and are important to consumers as well. In mid-1981, there were 47 Federal marketing orders for these crops, affecting commodities produced in 34 states.^{1/} More than half of the fruits and tree nuts produced in the country, measured in value terms, and about 15 percent of the vegetables are covered by these programs. These covered commodities had an estimated farm value of \$5.2 billion in 1980. This represents about 8 percent of total farm receipts from crop sales and about \$23 per person in the United States.

Marketing orders are issued by the Secretary of Agriculture after a notice and an opportunity for a hearing on each proposed order. The orders authorize certain restrictions on the qualities and/or quantities of products that can be marketed. The restrictions authorized vary among orders and may include packaging standards, minimum requirements for grade and size, limitations on quantities shipped during certain periods within the marketing season, limitations on quantities going to the fresh market and, in a few cases, limitations on total marketings. The cost of operating orders is paid by handler assessments to cover administrative expenses and, in some cases, to finance research and promotion activities.

^{1/} There are 48 Federal marketing programs for fruits, vegetables, and specialty crops under the provisions of the Agricultural Marketing Agreement Act of 1937. The peanut program involves a marketing agreement, but no marketing order.

Fruit and vegetable marketing orders first came into being in the 1930's. Legislative authority for these programs now rests in the Agricultural Marketing Agreement Act of 1937, as amended (hereafter referred to as the Act).^{2/} Although this law has been strengthened modestly and coverage has been extended to additional commodities, its basic provisions have remained unchanged since enactment.

Marketing orders were provided by Congress primarily as a tool for establishing and maintaining orderly marketing conditions and establishing parity prices to farmers. The Act provides that the Secretary of Agriculture shall protect consumers' interests by raising prices gradually, by not using marketing orders to maintain prices above parity levels and by assuring that the actions are feasible in view of current demand in domestic and foreign markets. In practice, parity prices are attained infrequently under marketing orders; orderly marketing is more commonly cited as the purpose of these programs.^{3/}

^{2/} Agricultural Marketing Agreement Act of 1937, re-enacting, amending, and supplementing the Agricultural Adjustment Act as amended, 7 U.S.C., 601, 602, 608a-608e, 610, 612, 614, 624, 671-674.

^{3/} Parity prices were intended to give agricultural commodities a purchasing power with respect to articles that farmers buy equivalent to their purchasing power in a base period. Essentially, if prices paid by farmers increased by 20 percent over the base period, then the parity price for a commodity would be 20 percent higher than in the base period. U.S. parity prices are calculated by a prescribed

Each marketing order applies to a designated commodity produced within a specified geographic area. The order is proposed for implementation, usually by a producer group, subjected to review at a public hearing, evaluated by the U.S. Department of Agriculture as being necessary to achieve orderly marketing, and recommended for adoption. Objections to the proposed order are filed by critics of the preliminary decision and reviewed by the Secretary of Agriculture who submits a final decision for approval in referendum. Two-thirds of the eligible producers voting or producers with two-thirds of the volume represented in the referendum must approve or favor an order before it can take effect.^{4/} An order may be terminated or suspended at any time by the Secretary of Agriculture if he finds it is not fulfilling the intent of the Act or that termination is favored by a majority of the producers of the commodity as specified in the Act.

Once issued, a marketing order is binding on all handlers of the product in the area covered. Their mandatory nature distinguishes marketing orders

formula which takes into account historical relationships between farm product and farm input prices. For most marketing orders an adjustment is required to convert from the U.S. parity price to an equivalent parity price for the commodity covered by the order. A valid criticism of parity prices is that they do not take into account changes in technology that increase productivity, allowing farmers to produce the same outputs with fewer inputs.

^{4/} For California citrus fruits, the Act provides that three-fourths, rather than two-thirds, of the producers must approve the order.

from other forms of group action in marketing, such as cooperative ventures and marketing agreements, where participation is voluntary. Marketing orders were originally implemented after voluntary marketing agreement programs failed due to the "free-rider" problem--the ability of nonparticipants to benefit without meeting the restrictions and sharing the costs of the programs.

Fruit and vegetable marketing orders functioned for more than three decades with relatively little controversy. But during the 1970's, concerns arose about their effects on food prices and inflation. Current criticisms of marketing orders originate from several quarters--from those concerned about the burdens that any form of regulation places on industry and the economy, from consumers worried about food costs and food availability, and from members of the affected industries who object to the restrictions on their activities or the manner in which orders are administered.

A basic concern is that marketing order allocation mechanisms distort the use of resources so that society is less well off than it might otherwise be. An example is the diversion of commodities to secondary or lower-valued uses that raises concerns about food waste. Concerns about the effects of marketing orders on price level come from both sides. Farmers are concerned about prices being inadequate to cover production costs whereas consumers are concerned about how much food prices will be raised by marketing order restrictions.

Consumer groups also voice concerns about the effects of marketing orders on food availability and nutrition. They suggest that by raising consumers' prices or diverting lower quality

products to secondary uses, marketing orders may reduce the amounts of nutritious foods available to persons with lower incomes.

Producer cooperatives and a number of other producer representatives generally continue to support marketing orders as a means of bringing economic stability and equity to the marketing of fruit, vegetables, and various other products. But some growers and handlers are concerned about the mandatory nature of marketing orders and the restraints imposed on their marketing options. Some who support marketing orders have raised questions about the equity of the distribution of allotments and prorates.

There are a number of concerns about how marketing orders are administered--about voting rules in referendums, representation on administrative committees, the adequacy of public oversight, administrative costs, and the management of research, advertising, and promotion efforts.

The Agricultural Marketing Agreement Act requires some imported commodities to meet the same quality standards as specified under marketing order regulations for domestically produced products. These provisions, required by section 8e of the Act, have sometimes raised protests from importers and consumers.

Current concerns among different groups about the performance of fruit and vegetable marketing orders call for a reassessment of the benefits and costs of these programs. But there are no simple overall measures of benefits and costs, nor is there agreement about what items should be included in estimating costs and benefits and how they should be added up. This study attempts to determine what can be said with any degree of confidence about the effects

of marketing orders on economic efficiency, distribution of income, entrepreneurial independence, and numbers and sizes of farms. Options for changing marketing orders are identified and assessed in light of these effects and public concerns. The study does not attempt to show which option is best--that being a determination that must be made by policy-makers--but rather to describe the trade-offs associated with the different options.

In the next section, the evolution of the fruit and vegetable industry and of marketing orders is traced. Further background is provided in the subsequent sections on the "Economic Rationale for Considering Government Action" and "Provisions and Administration of Marketing Orders." The analytical core of the report is contained in the section on "Economic Effects of Marketing Orders." The final section on "Impacts of Selected Policy Options" is intended to place these results within a more practical decision-making framework.

EVOLUTION OF MARKETING ORDERS

The conditions faced by the fruit and vegetable industry have led growers to experiment with several types of marketing institutions since the turn of the century. This experience provides useful background for evaluating the performance and assessing the need for change in the current marketing order programs.^{5/}

^{5/} For a more complete history of the development of marketing orders, the reader may consult the following: Farrell, Kenneth R., Federal and State Enabling Legislation for Fruit and Vegetable Marketing Orders: Evolution and Current Status, Supplement No. 3 to

The number of cooperative marketing associations for fruits and vegetables grew rapidly during the late 1800's and early 1900's. Many of the early cooperative marketing ventures failed, while others survived and expanded into the important positions which they currently occupy.

Fruit and vegetable producers shared with other farmers the comparative prosperity of the 1910-19 era. But the sudden decline in farm prices in 1920-22 created a crisis in agriculture which was aggravated for fruit producers as new plantings induced by the high prices of the preceding decade came into production. As prices received by producers dropped, attention turned to development of programs to regulate the quantity and quality of fruits and vegetables marketed. A few of the stronger cooperatives attempted unilateral regulation of the marketing and growing of fruits, but achieved little lasting success.

During the 1920's, "clearinghouses" were developed to function as coordinating agencies in the marketing of products of the voluntarily participating handlers. The Agricultural Marketing Act of 1929 relied heavily upon horizontal combinations of producers into comprehensive cooperative sales agencies as a means of attaining more orderly marketing and higher prices in both domestic and foreign markets.

Technical Study No. 4, Report of the National Commission on Food Marketing, June 1966, and Foytik, Jerry, "Marketing Agreements: Fruits and Vegetables" in Benedict, Murray R., and Oscar C. Stine, The Agricultural Commodity Programs: Two Decades of Experience, The Twentieth Century Fund, New York, 1956, pp. 368-415.

While some of the foregoing arrangements succeeded initially in raising prices and improving marketing conditions for growers, all eventually failed to sustain initial successes. One common limitation was the inability to induce or maintain participation by sufficient numbers of producers and handlers. Since nonparticipants enjoyed the same benefits as participants, but avoided the prorated or volume limitations, there was little incentive to participate. This has been termed the "free-rider" problem, and it characterizes many voluntary self-help programs in agriculture.

The failures in these voluntary efforts helped prepare the way for marketing orders. Starting in the mid-1920's, the general posture of government in relation to agriculture began to change from a largely passive role to one of more direct involvement. Several principles were incorporated into initial proposals for legislation and carried through subsequent formulations of agricultural marketing programs to finally be incorporated into the Agricultural Marketing Agreement Act of 1937.

The Agricultural Adjustment Act of 1933 authorized the Secretary of Agriculture to enter into marketing agreements with handlers and associations of producers and processors, and to issue licenses permitting such firms and associations to handle commodities. The licensing provision was viewed as a means to induce handlers and processors to participate in marketing agreements.

Following passage of the Agricultural Adjustment Act of 1933, a number of marketing agreements were approved and licenses issued for milk, fruits and vegetables, and other agricultural products. State legislation enabled State-sponsored programs to supplement

the AAA programs. Experience with California fruit and vegetable voluntary prorate programs during 1929-32 led to a California Agricultural Prorate Act in 1933. This Act provided for regulation of quantity and timing of product marketed and made such regulation incumbent on all producers in an industry when favored by two-thirds of the relevant producers both by number and by volume of production.

Questions about the constitutionality of licensing provisions in the Agricultural Adjustment Act of 1933 led to various amendments and eventually the substitution of marketing order authority in 1935. The 1935 marketing order provisions were reaffirmed in the Agricultural Marketing Agreement Act of 1937, which remains the statutory basis for the Federal marketing order programs.

The Agricultural Marketing Agreement Act of 1937 was enacted during the Great Depression, a time of economic turmoil for agriculture and the rest of the economy. Provisions of the Act were heavily influenced by activities and views of cooperatives in a number of the fruit and vegetable industries and by the economic climate of the times. The declaration of emergency and the general policy expressed by Congress in the passing of the Act clearly indicate that the statute was intended primarily for the economic benefit of producers of farm products.

During the four and one-half decades since the Act was passed, the fruit and vegetable industries have undergone substantial change. Yields and quality have increased with geographic concentration, improved pesticides, fertilization and mechanization, the introduction of new varieties and expansion of irrigation (tables 1 and 2). Mechanization

of harvesting has advanced, and controlled atmosphere storage has become important for some commodities. The interstate highway system and new types of equipment have improved transportation. Managers of farms and marketing firms have become more sensitive to consumers' desires for consistently high quality produce. These changes have facilitated substantial growth in the fresh fruit and nut industries, particularly during the last decade (table 3). While acreage has declined, production of vegetables for fresh market has increased with rising yields.

Despite this growth and new technology, the basic marketing problems of fruit, vegetable, and specialty crop growers remain much the same. Yields remain highly variable due to weather, diseases, and other environmental factors, although relatively less so than in earlier years for some crops (tables 1 and 2). Average year-to-year price changes of 25 percent or more are common (tables 4, 5 and 6). Bringing new orchards or vineyards into production still requires years. And many of the fruits and vegetables still can be stored only for brief intervals.

At the time the initial enabling legislation was enacted, the marketing system for fresh produce consisted of many different types of firms including producers, first-handlers, wholesale brokers, commission sales agents, terminal marketing facilities near large population centers, and, finally, large numbers of small retailers. Today, 30-40 percent of fruit and vegetable volume is received directly by the retail food chains and wholesaler-affiliated groups through their purchasing systems. This share is almost the same as it was 20 years ago and modestly higher than it was in the mid-1930's. Terminal markets persist in many cities and wholesaling functions

Table 1--Mean yield and yield variability for selected citrus fruits under marketing orders, 1939-49 and 1969-79

Program	1939-49			1969-79		
	Mean	Range	Avg. annual variation 1/	Mean	Range	Avg. annual variation 1/
	<u>1000 Lb /acre</u>		<u>Percent</u>	<u>1000 Lb /acre</u>		<u>Percent</u>
Calif. navel oranges	15.4	10.2-18.7	21.5	15.0	11.8-19.9	19.2
Calif. valencia oranges	15.6	13.0-20.1	14.6	17.1	12.4-21.6	19.3
Calif. grapefruit 2/	12.0	7.3-15.7	15.7	28.0	21.3-31.8	10.0
Fla. oranges	14.9	10.4-18.7	11.4	24.7	19.4-28.3	7.3
Fla. grapefruit	23.4	14.5-28.4	26.0	34.6	32.2-36.7	5.0
Fla. limes	3.0	1.5-4.4	19.6	16.9	9.7-20.0	13.5
Tex. grapefruit	18.8	11.0-24.4	13.4	22.8	16.2-28.3	21.1
Calif.-Ariz. lemons	16.9	12.2-24.2	18.1	23.7	18.8-31.9	23.2

1/ These are 10-year averages of annual absolute percentage changes each calculated as follows: $100 \times |Yield_{t+1} - Yield_t| / Yield_t$.

2/ 1939-48 and 1969-78.

Source: Calculated from data published by Crop Reporting Board, USDA.

Table 2--Mean yield and yield variability for selected vegetables under marketing orders, 1939-49 and 1969-79

Program	1939-49			1969-79		
	Mean	Range	Avg. annual variation 1/	Mean	Range	Avg. annual variation 1/
	<u>Cwt/acre</u>		<u>Percent</u>	<u>Cwt/acre</u>		<u>Percent</u>
Idaho potatoes	146	128-180	12.6	245	220-275	3.6
Wash. potatoes	162	115-228	9.6	432	386-475	4.0
Oreg. potatoes	147	112-186	9.7	370	284-441	7.5
Calif. potatoes	193	168-210	9.0	324	280-370	6.2
Colo. potatoes	135	92-194	12.3	260	233-288	3.8
Maine potatoes	191	141-276	15.3	238	210-260	10.6
Va. potatoes	80	50-115	25.6	125	96-141	13.0
Idaho onions	319	250-400	16.9	482	450-550	7.9
Tex. onions	47	38-62	17.6	168	145-200	10.2
Tex. tomatoes	39	26-47	16.1	60	45-77	16.9
Fla. tomatoes	63	42-93	17.7	199	111-275	15.4
Fla. celery	290	245-336	7.1	393	347-450	7.3
Tex. lettuce	116	98-140	11.2	181	124-245	13.0
Tex. melons		Not reported		104	71-132	14.4

1/ These are 10-year averages of annual absolute percentage changes each calculated as follows: $100 \times |Yield_{t+1} - Yield_t| / Yield_t$.

Source: Calculated from data published by the Crop Reporting Board, USDA.

Table 3--U.S. production of fruits, vegetables for fresh market, tree nuts, hops and spearmint oil, decade averages 1940-49 to 1970-79 and 1980

Commodity	Average				1980
	1940-49	1950-59	1960-69	1970-79	
	<u>Thousand tons</u>				
Fruits					
Citrus.....	6,810	7,900	8,787	14,008	14,974
Noncitrus.....	8,914	9,082	10,014	10,987	14,495
Total.....	15,724	16,982	18,801	24,995	29,469
Vegetables for fresh market..	18,282	19,773	22,511	26,048	25,206
Tree nuts.....	167	200	273	455	584
	<u>Tons</u>				
Hops.....	23,619	24,302	23,854	26,852	37,780
Spearmint oil.....	184	307	583	971	1,070

Source: Crop Reporting Board, USDA.

Table 4--Mean and variability of season-average grower prices for fruits
under marketing orders, 1970-71 to 1979-80

Program	Price level	Unit	Mean	Range	Average annual % variation 1/
Calif. grapefruit	On tree	\$/box	3.26	2.19-4.65	23.6
Fla. oranges	On tree	\$/box	2.91	1.81-5.36	25.4
Fla. grapefruit	On tree	\$/box	2.90	2.35-4.15	14.8
Tex. oranges	On tree	\$/box	2.28	.98-4.67	28.6
Tex. grapefruit	On tree	\$/box	2.05	1.22-3.18	27.1
Calif.Ariz.navels	On tree	\$/box	4.38	3.00-8.03	28.8
Calif.Ariz.valencias	On tree	\$/box	3.90	2.56-6.82	28.2
Calif.Ariz.lemons	On tree	\$/box	6.41	4.22-8.54	17.2
Fla. limes	On tree	\$/box	13.36	6.80-21.35	15.5
Fla. Indian River grapefruit	On tree	\$/box	3.10	2.57-4.50	13.6
Fla. Interior grapefruit	On tree	\$/box	2.60	1.94-3.59	16.9
Fla. Avocados	On tree	\$/ton	416	286-690	19.8
Calif. nectarines	1st point of sale	\$/ton	229	156-313	20.8
Calif. pears	On tree	\$/ton	142	78-258	44.6
Calif. plums	On tree	\$/ton	235	167-340	31.6
Calif. peaches	On tree	¢/lb	7.3	4.5-12.7	22.5
Ga. peaches	On tree	¢/lb	9.4	3.3-20.1	34.2
Colo. peaches	On tree	¢/lb	8.4	3.43-11.6	39.6

1/ See footnote at end of table.

Continued

Table 4--Mean and variability of season-average grower prices for fruits under marketing orders, 1970-71 to 1979-80--continued

Program	Price level	Unit	Mean	Range	Average annual % variation 1/
Wash. apricots	On tree	\$/ton	287	99-392	23.7
Wash. cherries	Packing house door	\$/ton	547	359-879	26.1
Wash.-Oreg. prunes	On tree	\$/ton	135	81-185	40.9
Calif. Tokay grapes	On vine	\$/ton	197	79-318	40.8
Winter pears	On tree	\$/ton	184	82-270	30.6
Hawaii papayas	1st point of sale	¢/lb	16.1	13.2-25.6	19.1
Cranberries	1st delivery point	\$/bbl	17.4	10.7-32.9	12.0
Tart cherries	Processing plant door	¢/lb	23.3	8.1-47.9	49.2
Wash.-Oreg. Bartlett pears	On tree	\$/ton	156	79-246	33.2
Calif. olives	1st delivery point	\$/ton	352	148-434	36.6

1/ These are 10-year averages of annual absolute percentage changes each calculated as follows: $100 \times |P_{t+1} - P_t| / P_t$, where P_t is the season-average grower price divided by the index of prices paid by farmers for production, interest, taxes, and wages.

Table 5--Mean and variability of season-average grower prices for vegetables under marketing orders, 1970-71 to 1979-80

Program	Price level	Unit	Mean	Range	Average annual % variation 1/
Idaho potatoes 2/	Point of 1st sale	\$/cwt	2.83	1.60-3.79	19.4
Wash. potatoes	Point of 1st sale	\$/cwt	2.50	1.40-3.65	17.1
Oreg. potatoes	Point of 1st sale	\$/cwt	2.95	1.71-4.60	20.8
Colo. potatoes	Point of 1st sale	\$/cwt	2.81	1.42-5.06	31.8
Maine potatoes	Point of 1st sale	\$/cwt	3.94	1.70-7.25	43.3
Va. potatoes	Point of 1st sale	\$/cwt	5.01	2.44-8.43	31.8
Idaho onions	F.o.b. ship. point	\$/cwt	6.78	3.25-10.30	47.2
Tex. onions	F.o.b. ship. point	\$/cwt	8.71	3.97-16.50	68.4
Tex. tomatoes	F.o.b. ship. point	\$/cwt	20.58	15.94-30.32	18.2
Fla. tomatoes	F.o.b. ship. point	\$/cwt	18.49	13.37-21.89	8.6
Fla. celery	F.o.b. ship. point	\$/cwt	8.49	4.23-12.27	28.1
Tex. lettuce	F.o.b. ship. point	\$/cwt	7.72	4.01-17.00	30.8
Tex. melons	F.o.b. ship. point	\$/cwt	12.93	9.07-17.76	16.1

1/ These are 10-year averages of annual absolute percentage changes each calculated as follows: $100 \times |P_{t+1} - P_t| / P_t$ where P_t is the season-average grower price divided by the index of prices paid by farmers for production, interest, taxes, and wages.

2/ Potato prices are for all uses.

Table 6--Mean and variability of season-average grower prices for specialty crops under marketing orders, 1970-71 to 1979-80

Program	Price level	Unit	Mean	Range	Average annual % variation 1/
Almonds	1st delivery point	¢/lb kw	88.9	53.8-153.0	26.0
Filberts	1st delivery point	\$/ton	632	414-951	8.0
Walnuts	1st delivery point	\$/ton	637	405-1302	23.2
Spearmint oil	1st delivery point	\$/lb	8.42	4.18-12.40	16.5
Dates	1st delivery point	\$/ton	288	149-514	9.1
Raisins	1st delivery point	\$/ton	696	283-1151	15.1
Hops	1st delivery point	\$/lb	79.4	56.0-97.6	6.1
Prunes	1st delivery point	\$/ton	475	202-812	24.3

1/ These are 10-year averages of annual absolute percentage changes each calculated as follows: $100 \times |P_{t+1} - P_t| / P_t$ where P_t is the season-average grower price divided by the index of prices paid by farmers for production, interest, taxes, and wages.

are still performed to provide services to the smaller retailers that remain in the market and to the growing away-from-home food service trade. Meanwhile, the numbers of growers and handlers have declined for most commodities under marketing orders (tables 7 and 8).

The statutory provisions for marketing orders remain basically the same as when the Act was passed in 1937. The number of Federal marketing orders increased sporadically from 1937 to 1965, but has changed little since then (table 9). Between 1937 and 1942, seven new deciduous fruit orders took effect, five of which have survived. Separate orders for grapefruit and lemons were initiated in California. New orders replaced old orders for Florida citrus and California-Arizona oranges. Four potato orders were initiated; three of which continue in effect. Six new orders for other vegetables were established; one of these, Florida celery, survives.

Another wave of new order formulation occurred in 1948-1950 when orders came into effect for filberts, almonds, pecans, raisins, and dried prunes. Six new potato orders were also started during this interval.

Amendments to the Act in 1948 and 1954 authorized use of minimum quality and maturity standards and continuation of rate-of-flow regulations if parity is exceeded during the season. In 1961, it was determined that, once initiated during a marketing season, any regulation believed to contribute to orderly marketing should be allowed to stand for that season, even if parity prices are exceeded prior to the end of the marketing season.

The number of marketing orders increased substantially from 1955 to 1965. Three new citrus orders were started in Florida and one in Texas. Washington apricots, sweet cherries, and peaches along with Washington-Oregon prunes and Bartlett pears were brought under orders as were cranberries, Florida avocados, and California nectarines and olives. Seven new orders were initiated for vegetables including the five that survive for Florida tomatoes, Idaho-Oregon onions, Texas tomatoes, South Texas lettuce and South Texas onions. Since 1965, orders have been added for tart cherries, papayas, hops, Texas melons, California desert grapes and spearmint oil while two orders for noncitrus fruits and two potato orders have been terminated.

Support for marketing orders was probably greatest in the 1950's and early 1960's when legislation was passed to allow more commodities to be covered and allow regulations to continue for the season even when parity prices were exceeded. In the 1970's, concerns arose about the effects of marketing orders on consumers and on inflation. Federal Trade Commission (FTC) and Justice Department officials charged that marketing orders elevate prices relative to prices for similar commodities and relative to what prices would be in the absence of orders; that price stabilization aspects of orders are not necessarily consistent with appropriate public policy; and that consumers are overtly ignored in establishing marketing order operating policies (see Masson 1975, 1976 and Masson et.al. as cited in Appendix B).

In 1974-75, a U.S. Department of Agriculture Interagency Task Force examined Federal marketing orders for

Table 7--Estimated number of commercial producers for commodities covered by marketing orders, 5-year intervals, 1965-1980 1/

Area and commodity	1965	1970	1975	1980
Fla. citrus	15,000	15,600	15,600	14,000
Tex. citrus	4,000	4,000	2,800	2,900
Calif.-Ariz. navel oranges	4,200	4,600	4,750	4,059
Calif.-Ariz. valencia oranges	5,100	4,600	4,400	3,830
Calif.-Ariz. desert grapefruit	2,000	600	600	300
Calif.-Ariz. lemons	4,000	2,350	2,000	2,400
Fla. limes	500	500	100	160
Fla. Indian River grapefruit	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Fla. Interior grapefruit	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Fla. avocados	600	600	150	190
Calif. nectarines	1,250	1,250	700	700
Calif. peaches	2,500	2,500	900	
Calif. plums	2,270	2,270	1,700	2,650
Calif. Bartlett pears	3,450	3,450	540	
Ga. peaches	350	350	120	100
Colo. peaches	800	800	300	200
Wash. peaches	1,500	1,500	500	450
Wash. apricots	1,000	1,000	250	210
Wash. sweet cherries	1,000	1,000	1,300	1,200
Wash.-Oreg. prunes	1,000	1,000	500	450
Calif. Tokay grapes	1,200	1,200	1,200	400
Winter pears (3 Pacific States)	1,800	1,800	1,800	1,500
Hawaii papayas	<u>3/</u>	165	180	180
Cranberries (10 States)	1,300	1,300	1,000	900
Tart cherries (8 States)	<u>3/</u>	2,300	2,600	2,600
Wash.-Oreg. Bartlett pears	2,000	2,000	2,500	2,000
Calif. olives	1,500	1,500	1,500	1,300
Idaho potatoes	5,624	3,817	1,900	2,000
Wash. potatoes	850	704	425	400
Oreg.-Calif. potatoes	1,003	850	750	464
Colo. potatoes	1,455	812	280	395
Maine potatoes	3,003	2,148	900	1,281
Va. potatoes	3,955	1,400	300	300
Idaho onions	300	295	400	250
Tex. onions	600	342	195	180
Tex. tomatoes	1,200	300	70	40
Fla. tomatoes	1,360	435	100	185
Fla. celery	<u>3/</u>	49	42	26
Tex. lettuce	146	146	50	47
Tex. melons	<u>3/</u>	<u>3/</u>	<u>3/</u>	76

Continued

Table 7--Estimated number of commercial producers for commodities covered by marketing orders, 5-year intervals, 1965-1980--continued 1/

Area and commodity	1965	1970	1975	1980
Calif. almonds	8,000	6,954	6,500	7,091
Oreg.-Wash. filberts	2,600 <u>4/</u>	1,390	1,062	1,081
Calif. walnuts <u>5/</u>	10,000	9,000	7,900	9,000
Spearmint oil (6 Western States)	<u>3/</u>	<u>3/</u>	<u>3/</u>	250
Calif. dates	235	160	175	143
Calif. raisins	5,000	4,600	4,500	4,800
Hops (4 Western States)	350	225	202	224
Calif. prunes	4,300	4,500	2,600	2,000

1/ Since data on numbers of growers are not collected on a systematic basis, these estimates are based upon judgments made each year by AMS personnel. They are presented to show generally how numbers of growers have changed. Because of the possibility of large errors these estimates should not be used to draw specific conclusions about individual commodities.

2/ Included in Florida citrus (905).

3/ Not available.

4/ Only includes farms with 50 or more trees.

5/ Included Oregon and Washington before 1976.

Table 8--Estimated number of handlers for commodities covered by marketing orders, 5-year intervals, 1965-1980 1/

Area and commodity	1965	1970	1975	1980
Fla. citrus	157	144	142	135
Tex. citrus	21	21	23	25
Calif.-Ariz. navel oranges	147	145	118	111
Calif.-Ariz. valencia oranges	152	148	130	119
Calif.-Ariz. desert grapefruit	<u>1/</u>	<u>1/</u>	55	<u>1/</u>
Calif.-Ariz. lemons	66	63	65	67
Fla. limes	17	18	24	28
Fla. Indian River grapefruit	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Fla. Interior grapefruit	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Fla. avocados	35	40	36	39
Calif. nectarines	<u>1/</u>	275	226	240
Calif. peaches	<u>1/</u>	442	242	<u>1/</u>
Calif. plums	<u>1/</u>	600	442	<u>1/</u>
Calif. Bartlett pears	<u>1/</u>	73	61	<u>1/</u>
Ga. peaches	36	42	34	32
Colo. peaches	43	95	63	72
Wash. peaches	118	124	139	112
Wash. apricots	25	61	82	63
Wash. sweet cherries	22	68	142	69
Wash.-Oreg. prunes	40	45	51	35
Calif. Tokay grapes	35	23	22	21
Winter pears (3 Pacific States)	95	107	103	83
Hawaii papayas	<u>1/</u>	86	174	73
Cranberries (10 States)	<u>1/</u>	35	20	25
Tart cherries (8 States)	<u>1/</u>	<u>1/</u>	75	81
Wash.-Oreg. Bartlett pears	95	107	95	70
Calif. olives	29	12	10	7
Idaho potatoes	163	115	93	117
Wash. potatoes	113	66	63	68
Oreg.-Calif. potatoes	183	121	64	44
Colo. potatoes	62	71	63	76
Maine potatoes	<u>3/</u>	<u>3/</u>	<u>3/</u>	<u>3/</u>
Va. potatoes	300	270	250	200
Idaho onions	25	23	27	23
Tex. onions	68	52	49	45
Tex. tomatoes	<u>3/</u>	<u>3/</u>	<u>3/</u>	<u>3/</u>
Fla. tomatoes	125	110	92	97
Fla. celery	16	15	15	12
Tex. lettuce	20	23	13	10
Tex. melons	<u>1/</u>	<u>1/</u>	<u>1/</u>	<u>1/</u>

Continued

Table 8--Estimated number of handlers for commodities covered by marketing orders, 5-year intervals, 1965-1980--continued 1/

Area and commodity	1965	1970	1975	1980
Calif. almonds	12	17	17	20
Oreg.-Wash. filberts	10	9	8	9
Calif. walnuts <u>5/</u>	50	48	39	27
Spearmint oil (6 Western States)	<u>1/</u>	<u>1/</u>	<u>1/</u>	10
Calif. dates	20	12	17	17
Calif. raisins	23	18	18	20
Hops (4 Western States)	27	18	21	12
Calif. prunes	17	14	12	13

1/ Not available.

2/ Included in Florida citrus

3/ No regulation issued.

4/ Included Oregon and Washington before 1976.

Table 9--Numbers of Federal marketing order and agreement programs in effect on Jan. 1,
by decade 1940-1980 and 1981

Type of commodity	1940	1950	1960	1970	1980	1981
Citrus	2	4	6	9	9	9
Other fruits	5	8	10	16	16	17
Dried fruits	0	2	3	3	3	3
Tree nuts	1	3	3	3	3	3
Potatoes	1	9	8	7	6	6
Other vegetables	7	2	6	6	7	7
Peanuts, hops, and spearmint oil	1	1	0	2	2	3
Total	17	29	36	46	46	48

Sources: National Commission on Food Marketing, Federal and State Enabling Legislation for Fruit and Vegetable Marketing Orders, Evolution and Current Status, Supp. 3 to Tech. Study No. 4, June 1966; Foytik, Jerry, "Marketing Agreements: Fruits and Vegetables" in Benedict, Murray R. and Oscar Stine, The Agricultural Commodity Programs: Two Decades of Experience, The Twentieth Century Fund, New York, 1956; and USDA, Agricultural Marketing Service records.

potential inflationary impacts.^{6/} The Task Force recommended that inflationary impacts be considered in establishing marketing order regulations and that price impact assessments for each season be approved at a higher level within the USDA. It further recommended that consideration be given to subjecting new market allotment programs to then existing guidelines, that guidelines be established for the other types of marketing orders, and that the adequacy of data and analysis relevant to the price impacts of marketing orders be systematically reviewed and evaluated. A number of these recommendations have been implemented.

ECONOMIC RATIONALE FOR CONSIDERING GOVERNMENTAL ACTIONS

In reassessing the need for marketing orders, a critical question is: Does an economic rationale exist for considering any form of governmental action in the industries involved? More specifically, are there reasons to expect that free competition among private entrepreneurs will not lead to efficient resource allocation and an appropriate income distribution? If governmental intervention in the industry cannot even potentially improve social welfare, such intervention is clearly inappropriate.

While identification of an economic rationale for governmental actions is a necessary first step in evaluating the need for a public program, the existence of such a rationale is not a sufficient basis for public intervention. Public measures to solve problems may entail

greater costs than benefits, leaving society worse off. In other words, the least cost "solution" to some problems is to bear the costs of the imperfections rather than to mount a public program. This section sets the stage for considering the need for public intervention. It is not a final evaluation of the need for governmental actions of any kind, much less a statement of the need for marketing orders.

The use of information is a key feature of all markets and especially of the markets considered here. Improved information enables: (1) producers to allocate resources more efficiently; (2) distant buyers and sellers to make transactions with less product waste and lower costs of capital and labor; and (3) consumers to buy those items which yield them more satisfaction. Ideally, sufficient resources should be devoted to creating information so that at the margin the gains from greater information are equal to the cost of information. Removal of all uncertainty through a massive informational effort would be an inefficient and unattainable goal.

In many markets, individual firms lack incentives to produce the amount of information that is optimal from the standpoint of society. In contrast to products like food, information is not "used up" when utilized by a person, e.g., use of an estimate of total production by one grower does not make the estimate unavailable or useless to other growers. The technical term applied to such situations is that "externalities" exist. Since persons acting alone consider only their personal gains from information creation--ignoring possible benefits to others unless the information can be packaged and sold without divulging it to nonpaying people--too little information is typically produced by private

^{6/} U.S. Dept. Agric., Price Impacts of Federal Market Order Programs, Report of an Interagency Task Force, January 7, 1975. USDA Farmer Coop. Serv. Spec. Report. No. 12, Jan. 1975.

enterprise. Consequently, governments throughout the world assume a large role in the collection and dissemination of statistical information to aid producers and consumers in making better decisions. Whether such a governmental role is needed in the case of the fruits, vegetables, and specialty crops industry is a major topic of this report, as is a discussion of alternative government means to encourage better information.

Research is an important component of the information problem. Finding a solution to production, marketing, and consumption problems is often beneficial to society. An individual person or firm, however, often captures such a small proportion of the benefits from such solutions that the individual finds it uneconomic to mount a research program. In those cases where the patent laws allow exploitation of research results by an individual person or firm, society may yet choose to support a public research program to ensure that the results can be used by all rather than by an individual with the potential to earn large returns as a result of a monopoly position.

Another problem of free markets, that of the decisions of one producer or handler affecting the demand faced by others, has its origins in the insolvable information problem. Buyers are often unable to assess quality based solely on the external appearance of a product. This difficulty is particularly great in detecting immature food products early in the season. Individual buyers in such cases often find it uneconomical to engage in a more sophisticated testing plan to gain assurance of quality, e.g., typical supermarket customers are not likely to bring equipment to the store which can test sugar content of fruit in a nondestructive manner. The typical consumer gains a perception of the

desirability of a product through past experiences with it. In these circumstances growers, handlers, and retailers sometimes have an incentive to market goods whose quality is less than the average quality associated with the outward appearance of the product, e.g., an immature nectarine with good external features. In an unregulated market such misleading or deceptive behavior is penalized when buyers, and especially final consumers, associate their disappointing purchases with specific sellers and shift their purchases to more reliable sellers. This mechanism fails, however, when buyers cannot distinguish among the offerings of different sellers. In this case, all producers can suffer from a decreased demand due to the actions of one seller or a few sellers. In technical economic terms, "externalities" are present in the decisions by sellers as to what quality of product to market. Possible government actions for dealing with such externalities include: (1) providing more information to buyers, and especially final consumers, on quality characteristics not self evident from external appearance; or (2) allowing groups of producers and sellers to act collectively to enforce specified quality standards among themselves and thus gain a reliable image for their product among buyers.

Because of economies of scale, the number of handlers and processors buying each of the various fruits, vegetables, and specialty crops from farmers in a local area is often small. Consequently, these middlemen often exert a degree of monopoly-like or oligopoly-like control over prices and other terms of trade within the area. Such disparity in market power is sometimes heightened by inferior information among the many small growers relative to buyers, since individual small operators have little incentive to

produce information, as discussed above. Society is faced with a choice among several alternatives. The main ones are: (1) let the markets function freely without interference and tolerate any resulting abuses of monopoly or oligopoly power; (2) directly regulate the markets, at some cost of resources, in an attempt to limit the abuses of monopoly or oligopoly power; or (3) facilitate collective action among those facing the monopolist or oligopolists in an attempt to make the bargaining process less one-sided, and hope that the resulting transactions among two sides each having some monopoly-like powers will more closely approximate an efficient and equitable result than the one-sided case. Marketing orders represent one form of the third alternative. The desirability of this approach relative to others is clearly a matter to be determined by analysis rather than a foregone conclusion.

Finally, freely functioning markets may lead to a distribution of income which is considered undesirable from a societal viewpoint. Markets reward people on the basis of their personal skills and their material assets. The worth of people, however, is widely believed to transcend their value as sources of economic productivity. When markets produce unacceptable results--a judgment that must be made in the final analysis by the body politic--government has a wide variety of tools with which to step in and change matters, including direct transfer payments, subsidies tied to some activity, price supports, production controls, trade restrictions, and many other programs. Agricultural producers, among many other groups, have been major recipients of government aid in the past, based in part on distributional concerns. While an analyst is in no better position than any other citizen to judge what distribution of income is best, or even

better than another, the analyst can perform a useful function by describing the distribution of gains and losses associated with each policy alternative. Armed with this factual information, citizens and policymakers are in a better position to understand the consequences of their decisions--including the decision to not intervene in markets--and to implement their desires more effectively.

PROVISIONS AND ADMINISTRATION OF MARKETING ORDERS

Three broad categories of activities have been undertaken under Federal marketing order programs for fruits and vegetables--quality control, quantity control, and market support. Quality control is implemented through shipping restrictions on certain sizes and grades. Quantity control provisions consist of volume management and market flow regulations. Market support activities include shipping container and pack standards and research and promotion. Quality and quantity control provisions authorized in each fruit and vegetable order are summarized in table 10.

Quality Control

Quality control provisions in Federal marketing orders permit the setting of minimum grades, sizes, and maturity standards. These standards are normally enforced through mandatory Federal inspection.

The rationale for quality control provisions may be viewed in two ways. Removal of off-grade product improves the average quality of the product moving to market. A higher-quality product for the consumer should, presumably, face a higher demand and thus command a higher price and larger producer returns. However, since

Table 10--Quality and quantity control provisions of Federal marketing orders for fruits, vegetables, and specialty crops, July 1, 1981 1/

Order number, commodity and area <u>2/</u>	Year initiated	Authorized provisions <u>3/</u>		
		Grade or size	Volume management	Market flow
<u>Fruits:</u>				
904 <u>4/</u> California desert grapefruit	1980	G,S	- -	- -
905 Florida citrus	1939	G,S	- -	H
906 Texas oranges and grapefruit	1960	G,S	- -	<u>5/</u>
907 California-Arizona navel oranges	1953	S	- -	P
908 California-Arizona valencia oranges	1954	S	- -	P
910 California-Arizona lemons	1941	S	- -	P
911 Florida limes	1955	G,S	- -	H,P
912 Indian River (Florida) grapefruit	1962	- -	- -	P
913 Florida Interior grapefruit	1965	- -	- -	P
915 Florida avocados	1954	G,S	- -	H
916 California nectarines	1958	G,S	- -	- -
917 California pears, plums, and peaches	1939	G,S	- -	- -
918 Georgia peaches	1942	G,S	- -	- -
919 Colorado peaches	1956	G,S	- -	- -
921 Washington peaches	1960	G,S	- -	- -
922 Washington apricots	1957	G,S	- -	- -
923 Washington sweet cherries	1957	G,S	- -	- -
924 Washington-Oregon fresh prunes	1960	G,S	- -	- -
925 <u>4/</u> California desert grapes	1980	G,S	- -	H
926 California Tokay grapes	1940	G,S	- -	H,P
927 Pacific coast winter pears	1939	G,S	- -	- -
928 Hawaii papayas	1971	G,S	- -	- -
929 Cranberries - 10 States	1960	<u>6/</u>	A,M	- -
930 <u>4/</u> Tart cherries - 8 States	1971	<u>6/</u>	R	- -
931 Washington-Oregon Bartlett pears	1965	G,S	- -	- -
932 California olives	1965	G,S	- -	- -

See footnotes at end of table.

Continued

Table 10--Quality and quantity control provisions of Federal marketing orders for fruits, vegetables, and specialty crops, July 1, 1981--continued 1/

Order number, commodity and area <u>2/</u>	Year initiated	Authorized provisions <u>3/</u>		
		Grade or size	Volume management	Market flow
<u>Vegetables:</u>				
945 Idaho-E. Oregon potatoes	1941	G,S	- -	- -
946 Washington potatoes	1949	G,S	- -	- -
947 S. Oregon-N. California potatoes	1942	G,S	- -	- -
948 Colorado potatoes	1941	G,S	- -	- -
950 Maine potatoes	1954	G,S	- -	- -
953 Virginia-N. Carolina potatoes	1948	G,S	- -	- -
958 Idaho-E. Oregon onions	1957	G,S	- -	H
959 South Texas onions	1961	G,S	- -	H
965 <u>4/</u> Rio Grande Valley (Texas) tomatoes	1959	G,S	- -	- -
966 Florida tomatoes	1955	G,S	- -	- -
967 Florida celery	1965	G,S	A	H,P
971 South Texas lettuce	1960	G,S	- -	H,P
979 Texas melons	1979	G,S	- -	- -
<u>Dried fruits and nuts:</u>				
981 California almonds	1950	G	M,R	- -
982 Oregon-Washington filberts	1949	G,S	M	- -
984 Pacific coast walnuts	1948	G,S	M,R	- -
985 <u>4/</u> Far West spearmint oil	1980	- -	R,A	- -
987 California dates	1955	G,S	M	- -
989 California raisins	1949	G,S	M,R	- -
991 <u>4/</u> Idaho, Washington, Oregon, and California hops	1966	G	R,A	- -
993 California prunes	1949	G,S	R	- -

1/ Marketing agreements accompany all orders except those noted.

2/ Order number refers to part in the Code of Federal Regulations where the order is found. For example, order No. 905 is codified as 7 CFR 905.

Continued

Table 10--Quality and quantity control provisions of Federal marketing orders for fruits, vegetables, and specialty crops, July 1, 1981--continued

3/ Symbols for the various provisions are defined as follows:

G = minimum grade requirement; S = minimum size requirement; M = market allocation provision; R = reserve pool provision; A = producer allotment provision; H = shipping holiday; and P = prorate. Prorate periods are 1 week except for Tokay grapes (3 days) and Florida celery (unspecified). Dashes indicate that the order does not authorize the indicated type of provision. Authorized provisions are not necessarily employed every year.

4/ Order only; no marketing agreement.

5/ Restricting handler deliveries is specifically prohibited.

6/ Grade and size specifications apply only to restricted portion of crop.

Source: U.S. Code of Federal Regulations, Revised as of January 1, 1981.

quality restrictions may reduce the amount available for sale in the short run, they can also be viewed as an indirect means of quantity control.

The use of quality controls varies considerably among orders, and sometimes varies within the same order over time. In some cases, quality standards remain unchanged over several marketing years. Use of standards in this fashion suggests an intent to impose and maintain minimum levels of product quality. In other cases, standards are changed from season to season or within shipping seasons. This might be evidence of an attempt to manipulate the total quantity sold; that is, to use quality standards as a form of quantity control. Varying quality standards could also be used to "make the best of" an off-grade crop or foster quality improvements over time.

All but three fruit and vegetable marketing orders presently in effect provide for some form of quality control. Thirty-seven permit imposition of both size and grade regulations. Two permit only grade regulations and three only size. Two orders, cranberries and tart cherries, authorize grade and size standards only for the restricted portion of the crop (both also permit quantity controls). The Florida grapefruit orders (Interior and Indian River) do not authorize size and grade standards, but fruit sold under these orders is subject to size and grade standards under the Florida citrus order (order 905).

The Agricultural Marketing Agreement Act states in section 8e that if certain specified commodities are covered by a marketing order containing quality, size, and maturity control provisions, then imports of those commodities must meet the same or comparable standards. Presently, such import regulations

apply to the following commodities:

Fruits

avocados
grapefruit
limes
oranges
olives

Vegetables

potatoes
onions
tomatoes

Specialty Crops

dates, other than dates
for processing
walnuts
prunes
raisins
filberts

Quantity Control

Quantity control provisions represent the "strongest" form of regulation permitted under marketing orders since the direct regulation of quantity has the greatest potential for affecting price. The basic methods of quantity control are volume or sales management and market flow regulation. These are distinct strategies, although the major objective of each is to obtain a price higher than might exist in the absence of the marketing order. Volume management provisions attempt to influence price by reducing the quantity sold on the primary market. On the other hand, market flow regulations focus on regulating the within-season pattern of sales in the primary market, rather than controlling the total quantity sold. In principle, all production is sold under the latter arrangement, but this is not always the case in practice.

Volume Management

The three methods of volume management used under the Agricultural

Marketing Agreement Act are producer allotments, market allocation, and reserve pools. More than one of these provisions may be used simultaneously under a single order.

Producer Allotments - Economic theory suggests that the most direct and effective way to raise prices received by the seller is to restrict the total amount sold in the marketplace. This restriction can be accomplished via marketing allotments whereby each producer is assigned a maximum quantity to be sold off-farm. Currently, only the marketing orders for cranberries, Florida celery, hops, and spearmint oil have the authority to use producer allotments.

An individual producer's allotment base is normally calculated based on sales during a specified period. Each marketing season, the total quantity to be sold is established and expressed as a percent of the sum of the individual allotment bases for all producers. Each producer's sales allotment is simply this percentage applied to his individual base. For example, if the marketing order administrative committee recommends, on the basis of expected market conditions, that 80 percent of the total base allotment is to be sold, then, upon approval of the Secretary, each producer's allotment will be 80 percent of his individual base. Such a program would increase sellers' gross sales revenues only if they were operating on the inelastic portion of the market demand curve.^{7/}

Producer allotment authorities have been used only for hops, spearmint oil, and Florida celery. Each hops producer has an allotment base calculated from sales during the 1962-1965 period, the four years immediately preceding the establishment of the marketing order. A reserve pool is used in conjunction with the allotment provision to handle any excess production. While the order covers the entire domestic production area, hops producers cannot use producer allotments to control the total quantity marketed in the U.S. because imports presently comprise about one-third of United States hops consumption. In the case of the spearmint oil order (initiated in 1980), about 80 percent of U.S. production is covered and imports are not important, but the order does not bar entry of new producers. Florida celery allotments have historically been set far in excess of actual shipments. And, the celery order provides specific percentages for new entrants as well as an allowance for those base holders who wish to increase their sales. While authorized, producer allotments have never been established for the cranberry order.

Market Allocation - A market allocation program administratively dictates maximum sales in one of two or more different market outlets for the same basic commodity. Such programs can enhance producer returns if two conditions are satisfied: (1) the nature of demand (demand elasticity) differs among the markets, and (2) arbitrage among the markets (buying the product in one market for immediate

^{7/} The price elasticity of demand is the percentage change in quantity purchased associated with a 1 percent change in price. When market demand is inelastic, a 1 percent reduction in quantity available for purchase will be

associated with an increase in the commodity's price of more than 1 percent. This will result in a higher gross revenue. Increasing supply will have the opposite affect.

resale in another) is difficult, if not impossible. Allocating the supply between the domestic and export markets or allocating between the fresh and processed markets are examples of this provision. The market with the more inelastic demand (domestic, fresh) is viewed as the "primary" market and the market with the more elastic demand (export, processed) is viewed as the "secondary" market. To enhance grower returns, sales in the primary market are restricted with the remaining production sold in the secondary market. In theory, this form of allocation between separable markets results in higher grower returns than would be obtained in an unrestricted market (see Appendix A).

Marketing orders for cranberries, almonds, walnuts, filberts, California dates, and raisins currently authorize market allocation. All implement market allocation in a similar fashion. Prior to harvest, a "free" or "saleable" percentage is determined based on crop size and other market conditions. Each handler then applies this percentage to the total quantity handled in order to determine the quantity that may be marketed without restriction. Sales in excess of the free or saleable percentage must be in "non-competitive" market outlets. These are usually specified in the orders as export, manufactured products, oil, or livestock feed. Free percentages may be increased during a marketing season if the primary demand turns out to be greater than had been anticipated, but they may not be lowered.

Reserve Pools - Reserve pool programs are similar in principle to market allocation programs, but differ in that the restricted portions are held as a "set-aside," or reserve pool, rather than diverted immediately to secondary markets. Under this type of plan, sales out of the reserve pool can

be made on the primary market if demand conditions improve or supplies fall short of initial expectations. Commodities held in reserve pools may also be sold in primary markets in later years, diverted to secondary markets, or disposed of in nonfood uses. Reserve pools are authorized in the marketing orders for tart cherries, spearmint oil, almonds, walnuts, raisins, hops, and prunes.

Market Flow Regulations

The second form of quantity control authorized under marketing orders is market flow regulation. In principle, all of the production is sold, but producer returns may be enhanced by regulating the amount sold each week during the shipping season to avoid seasonal gluts with their corresponding low prices, and seasonal shortages with their corresponding high prices and lost sales. These regulations are implemented through handler prorates and shipping holidays.

Handler Prorates - Prorates specify the maximum quantity a handler may ship over a stated period of time, usually a week. Receipts by handlers in excess of this quantity must be held for shipment in subsequent time periods or diverted to secondary markets. Prorates for individual handlers are assigned according to prorate bases which may be related to the prospective supplies that handlers will control through ownership or contracts with growers.

Nine marketing orders authorize some type of prorate program. Six of these orders cover citrus, and the remaining three cover Tokay grapes, Florida celery, and South Texas lettuce.

Prorates are used extensively in the citrus industry where fruit may be stored on the tree for lengthy periods

of time without significant quality loss. While it might appear that order-imposed shipping limits are not excessively binding, use of prorates throughout most or all of a marketing season may force fruit otherwise suitable for fresh domestic sale into processing outlets. Used in this extended fashion, prorates are equivalent to market allocation provisions.

Different degrees of control are permitted under prorate plans. Prorates for Florida grapefruit in the Indian River district can be used for 12 weeks during the period from January to April while they can be used for up to 14 weeks in Florida's interior district. Prorates may be established for any week of the season under the California orange and lemon marketing orders. Handlers under the California orders may overshoot allotments by as much as 20 percent (to be deducted from the handler's prorate for the next week) and prorate "trades" are permitted among handlers and among districts.

Shipping Holidays - A second method for regulating within-season shipments is the use of shipping holidays, periods during which all commercial shipping is prohibited. The orders specify the conditions under which holidays may be declared, the maximum length of the holiday, and the minimum period between holidays. In practice, the use of shipping holidays is a weak form of controlling market flow, and holidays are typically limited to periods surrounding calendar holidays. Thus, they are used primarily to avoid a buildup of supplies in terminal markets during periods of restricted trade activity. Nine marketing orders authorize shipping holidays as a means of controlling market flow.

Market Support Activities

A final category of provisions authorized by the Agricultural Marketing Agreement Act for fruits, vegetables, and specialty crops is called here, for lack of a better term, market support activities. These provisions do not directly affect quantity sold, either in an absolute sense or over time. Rather, they contribute to achieving other legislative goals relating generally to the notion of orderly marketing.

Several types of market support activities are used in various marketing orders. Standardization of containers and packs is used to promote uniformity in packaging. Handlers may be assessed through orders to raise funds to support research or promotion. Advertising is permitted only for specific commodities listed in the Act. Orders may also be used to require handlers to post minimum prices and to prohibit unfair trade practices; however, these provisions are seldom employed. All orders require handlers to provide shipping information necessary for administering the orders. This information is aggregated to provide data useful in marketing decisions after being made public through the marketing order administrative process.

Market support activities are widely used in all of the major commodity groups. Among citrus orders, pack and container regulations are authorized for Florida citrus, Florida limes, and Texas citrus. All citrus orders except those for Florida citrus and Florida Interior and Indian River grapefruit can be used to raise money to support research and development projects. Advertising is authorized in the Texas citrus, Florida lime, and California grapefruit orders.

All noncitrus fruit orders contain provisions for financing research and development. Six orders permit adver-

tising. Most noncitrus orders also provide for pack and container standardization.

Two of the six orders for potatoes and all of the other vegetable orders authorize assessments for research and development. Most permit pack and container standardization. The Idaho-Oregon onion and the Florida celery orders permit advertising.

Finally, the date, prune, and filbert orders permit pack and/or container regulation. Advertising is authorized in the almond and date orders. The dried fruit, hop, and nut (except filbert) orders authorize research and development projects.

Order Administration

Fruit and vegetable marketing orders are an unusual form of regulation because they are initiated and largely controlled by growers and handlers while the terms are binding on the handlers. Recommendations for regulatory policy are made by administrative committees, composed of representatives of growers and handlers, with the counsel of USDA personnel. The Secretary of Agriculture has final authority and issues regulations concerning the operation of marketing orders.

Initiating or Amending an Order

Initiating a marketing order is a lengthy process requiring cooperation between commodity producers and the USDA. A proposal is developed and proceeds through legally defined public proceedings including a hearing and the opportunity for written input concerning the need for a marketing order. When a final order has been developed and approved by the Secretary of Agriculture, it is subjected to a producer referendum. A marketing order can

become effective only if two-thirds of the producers voting, or producers with two-thirds of the production represented by the vote, approve the order. For California citrus, the necessary producer numerical majority is three-fourths.

In producer referenda, bloc voting by cooperatives is permitted by statute--that is, a cooperative may cast a single vote representing all its members and their volume.

The procedure for amending an existing order is similar to initiating an order for fruits and vegetables. If the proposed provision or amendment is defeated in referendum, in most cases the order continues under the existing terms.

An order may be terminated in two ways. First, the Secretary of Agriculture may unilaterally terminate an order if it is determined that the order obstructs or does not support the declared policy of the Act. The Secretary also has the power to temporarily suspend an order. Second, the Secretary must terminate an order if more than 50 percent of the affected producers having at least 50 percent of the total volume of the commodity favor termination.

It is also possible for orders to become inactive without being suspended or terminated. When an order is inactive, no regulations are issued, but the order remains "on the books." The authority to regulate still exists, and the program may be reactivated if the industry so chooses.

Administering the Order

Orders are administered by committees comprised of growers or growers and handlers and, sometimes, public members.

The major responsibility of these administrative committees is to recommend regulatory policy and specific regulations to the Secretary of Agriculture, who is ultimately responsible for issuing regulations under the orders.

The administrative process starts before the beginning of the active marketing season. Committees meet to develop a marketing policy for the upcoming year. This takes the form of a statement submitted to the Secretary of Agriculture, usually along with recommendations for regulations. The formal statement is essentially a discussion of factors likely to affect the marketing of the new crop. While different for each order, these factors usually include the expected crop size, supplies of competing products and the same commodity from outside the order, consumer demand, and general economic conditions.

Next, the committees' recommendations concerning regulatory action are forwarded to the Agricultural Marketing Service for review and evaluation. AMS submits a work plan regarding the regulatory decision and the meaningful alternatives to the Assistant Secretary for Marketing and Inspection Services. The Assistant Secretary decides whether the regulations are "major" as defined in Executive Order 12291, whether the action has sufficient importance to warrant the Assistant Secretary's oversight or whether the agency shall have oversight. A regulatory analysis is prepared to assess the costs and benefits of the committee's recommendation, along with other alternatives, before the proposed regulations are approved. Proposed regulations are subsequently published in the Federal Register for public comment. Final regulations are issued based upon the

rulemaking record and published in the Federal Register.

For those marketing orders that use seasonal controls, administrative committees may meet periodically to review marketing conditions and recommend changes in regulations. For orders employing intraseasonal controls, such as shipment prorates, committees are more active, meeting as often as each week to discuss conditions and make recommendations. All administrative committee meetings are open to the public.

Committee members are nominated by the industry and are appointed by the Secretary of Agriculture. Nomination procedures included in the orders are designed to promote equitable representation. Sometimes geographical districts are specified, with the number of nominees related to the amount of production. Where cooperatives are important, a certain number of producer or handler memberships may be assigned to the cooperatives and their affiliates.

Non-industry, or "public", members of administrative committees are nominated by other committee members and are appointed by the Secretary of Agriculture. The inclusion of public members is a fairly recent innovation. Many orders have been amended over the last five years either to mandate or permit inclusion of a public member. The four newest orders, spearmint oil, California desert grapes, California grapefruit, and Texas melons require a public member. The three older orders for California-Arizona citrus, and the orders for Georgia peaches, Florida celery, filberts, walnuts, and raisins also mandate a non-industry or public member. The orders indicate that a public member may be included for Florida citrus, Florida limes, and

cranberries and for each of the three commodity committees of the California pears, plums, and peaches order. Several orders also authorize consumer consultants to the committees. The public member is occasionally a university staff member familiar with the industry.

Committee members are unsalaried but are usually reimbursed for the costs of attending committee meetings. Handlers are assessed on a per-unit basis to pay for these expenses and for all other administrative costs. The costs borne by USDA for oversight and administration were estimated to average slightly over \$40,000 per program during 1980.

The administrative committees' size ranges from 6 (Colorado potatoes) to 47 (raisins) members, with a median size of 11. There is little relationship between the geographical scope of the orders and the number of members. The order for raisins, which are mainly grown in an area around Fresno, California, has 47 members. The order for cranberries, grown in a 10-State area spanning the nation, has seven. The median producer membership of all committees is seven while the median handler membership is four. Producers hold a majority on all but seven committees; on those producers and handlers are equally represented. One order, Florida celery, does not indicate identity--members may be either producers or handlers except that at least five must be producers. Six committees have no handler members.

Seventeen orders specify some method of allocating committee memberships among cooperative and independent producers and handlers. In some cases, this allocation procedure also distinguishes between "major" and other cooperatives. The cranberry committee is the only one that permits a single

cooperative to have a majority of industry membership--4 of 7. But the cranberry order requires six concurring votes on any resolution. In some others, a single cooperative could possess a majority of voters depending on relative volume. (Prior to 1980, the California Almond Growers Exchange had a majority on the Almond Board.) However, other orders specifically deny a single cooperative majority representation on the committee. Sunkist and Sunkist-affiliated growers may have no more than half of the membership of administrative committees for the California-Arizona orange and lemon orders, even though the large cooperative handles more than half of the commodities affected.

Finally, some orders have more than one committee involved in their administration. The California tree fruit order has a federated committee structure with individual commodity committees sending members to a central committee. The committee for the Colorado potato order is similarly structured, with three area committees authorized. In the raisin order, an executive operations' committee serves as a subcommittee to the large administrative committee in order to facilitate timely decision-making. For the hops order a handler advisory committee is named to assist the grower administrative committee. And, members are not nominated specifically for the Florida Interior grapefruit committee. Membership consists of grapefruit growers and shippers who are members of the order committee for Florida citrus (order 905) and who reside and do business in the Interior district.

THE ECONOMIC EFFECTS OF MARKETING ORDERS

This section discusses how Federal marketing orders for fruits and vege-

tables have altered the competitive environment in the markets they affect. Conclusions regarding order effects are drawn based on deductive logic, real-world conditions within specific industries, and empirical evidence from economic studies of marketing orders.^{8/}

A major focus is economic efficiency; that is, how orders influence (both positively and negatively) the attainment of aggregate social welfare or satisfaction through their impacts on the allocation of productive resources. In this regard, we address such questions as:

- * Do orders induce or prevent product surpluses or shortages?
- * Do orders encourage or prevent edible food from reaching consumers?
- * Do orders elevate or reduce marketing costs?
- * Do orders promote or inhibit productivity?

Economic efficiency is an important societal goal. And other things held constant, greater economic efficiency is universally preferred over less.^{9/} But orders affect other measures of social

^{8/} Studies reviewed in this analysis are not specifically cited. They are summarized in Appendix B.

^{9/} "Other things held constant" is a critical assumption. Waugh provides an appropriate warning with respect to the complexity of economic efficiency: "An unsophisticated student might make two false assumptions: first, that it is easy to define (and to measure) the

welfare for which norms are not apparent. Effects on three such measures are addressed: income distribution (how orders influence income transfers among producers, handlers, and consumers), entrepreneurial independence (how orders limit individual choices in pursuit of group objectives), and number and size of farms (how orders affect farm structure).

The approach used in this analysis is straightforward. As noted earlier, marketing orders impose various constraints on the workings of a "free" market to achieve orderly marketing objectives--chiefly, elevating and stabilizing producer revenue. An early lesson learned in elementary economics is that in the absence of externalities or other market imperfections, any restraints on a competitive market lead to inefficient prices and output levels. Hence, the use of market controls, including marketing orders, should be avoided unless (1) efficiency gains from mitigating market failures and externalities exceed efficiency losses, or (2) some social goals obtainable through controls supersede the goal of efficiency.

efficiency of agricultural marketing; and second, that almost everyone is in favor of efficiency. Actually, the concept of efficiency is very difficult when applied to a complex problem such as the marketing of farm products. And actually the public may prefer to keep some known inefficiencies, rather than to adopt new methods--especially if the prospective improvements in efficiency might reduce employment, decrease price competition, or lead to greater concentration of economic power." Waugh, F. V., ed., Readings on Agricultural Marketing, Section 4, "Efficiency," Iowa State Press, 1954.

In this analysis, the manner in which marketing order regulations alter free market price and output levels is examined, and the nature of efficiency-related gains and losses is discussed. No attempt is made to calculate numerical measures of efficiency gains and losses. The intent is to provide a comprehensive listing and appraisal of order costs and benefits without judging individual or aggregate worth. Effects on income distribution, entrepreneurial independence, and number and size of farms are discussed without reference to whether these effects are individually or collectively beneficial or detrimental to society.

In interpreting the discussion in this section, the reader should not assume that Federal marketing orders are the only means of mitigating the marketing problems that orders address, or that government intervention in any form is more efficient than private action. This analysis is limited to order effects; likely effects of no government intervention, and of other government programs designed to achieve some of the same objectives as orders, are discussed in the following section.

Economic Efficiency 10/

While authorized by the same enabling legislation, each of the 47

10/ For a comprehensive definition of economic efficiency as it applies to agricultural markets, see French, Ben C., "The Analysis of Productive Efficiency in Agricultural Marketing: Models, Methods, and Progress," in "Martin, L. R., ed. A Survey of Agricultural Economics Literature, Vol. 1, Part II, University of Minnesota Press, 1977, pp. 94-97.

fruit and vegetable marketing orders currently in effect is a unique regulatory program. To examine order effects on efficiency and other goals, it is necessary to clearly distinguish among general types of programs employed and among orders employing these programs. The following major provisions influencing economic efficiency are separately discussed:

- * Price discrimination provisions
- * Producer allotments
- * Reserve pools
- * Minimum quality standards
- * Import quality standards
- * Market flow provisions
- * Pack and container standards
- * Research and advertising provisions

In addition, some effects of orders that are not specific to provisions are also discussed.

Price Discrimination Provisions

Market allocation orders (almonds, walnuts, filberts, dates, raisins, and cranberries) directly authorize the allocation of handler shipments among primary and secondary markets.^{11/} In addition, the season-long prorate

11/ Other provisions may indirectly entail price discrimination, as noted in subsequent discussions. Some orders designated here as market allocation orders also allow other forms of quantity control, but market allocation is the provision that has been most frequently used.

provisions of the three California-Arizona citrus orders (navel oranges, valencia oranges, and lemons) in effect allocate shipments among primary and secondary markets. Provided the specified primary and secondary markets are separable and possess different elasticities of demand at the same prices, allocation in this fashion can increase producer returns. Restricting shipments to the primary market with a more inelastic demand while simultaneously forcing the restricted shipments into secondary markets with more elastic demands increases the weighted average price for all sales relative to market-determined allocation.

Theoretical social welfare models point out the potential efficiency costs of price discrimination (see Appendix A). Given the assumptions of these models, application of market allocation controls in the short run (within a single marketing season) decreases the welfare of primary market consumers and increases the welfare of secondary market consumers. In the aggregate, consumer welfare is reduced more than producer welfare is increased. In effect, consumers are taxed more than producers are subsidized. In the long run (over several marketing seasons), additional social costs may be incurred. If producers expand production in response to higher returns, too many resources may be employed in producing the controlled commodity relative to no controls. Also, producer benefits may be eroded by capitalization of higher prices into the values of land and other fixed production assets.

While price discrimination provisions can enhance prices and lead to resource misallocation, they can also stabilize growers' prices and returns if properly applied. Because of differences in demand elasticities between

markets, producers as a group can sometimes obtain larger total revenue by selling part of their product on a secondary market at a price less than the primary market price than by selling at the same price on both markets. Consequently, constraining primary market sales and forcing larger sales in secondary markets during years of large crops can prevent total grower returns from sales in both markets from dropping as far as they would without controls. Such stabilization can, in theory, result in efficiency gains (see Appendix A). Specifically, stabilization may, by reducing the risks borne by producers, lead to expanded supply at the same price.

As shown in the appendix, the beneficial effects of reduced price instability may or may not outweigh the costs of resource misallocation due to price discrimination. A precise answer would require careful empirical studies of supply response and demand elasticities, and the answer would be different for different commodities. While such studies are beyond the scope of this analysis, the historical frequency and intensity of application of price discrimination provisions provides evidence of whether they have been used primarily to enhance or stabilize prices. Continual use of these provisions, particularly use during years with average or smaller than average crops, or increasing diversion to secondary markets, would suggest that efficiency losses from misallocation are likely to exceed any stabilization benefits. Occasional use during years with large crops would be consistent with a stabilization objective.

Substantial differences among orders in the use of price discrimination provisions are apparent in table 11. The almond, date, and cranberry orders did not regulate shipments for the crop

Table 11--Market allocation orders, restricted and unrestricted volume,
1960-61 to 1980-81

Marketing year	Almonds		Filberts		Walnuts 1/		Deglet Noor dates 2/		Natural seedless raisins		Cranberries	
	Surplus	Free	Restricted	Free	Reserve	Free	Restricted	Free	Surplus 3/	Free	Set- aside	remainder 4/
	mil lbs 5/		-----tons-----		1,000 lbs		1,000 lbs		-----tons-----		1,000 barrels	
1960-61	8.6	67.5	1,871	6,545	0	66,511	9,026	39,055	22,308	162,739		
1961-62	10.0	75.6	4,367	6,425	0	63,032	8,286	37,910	54,042	173,050		
1962-63	7.9	67.0	892	5,561	2,612	71,330	9,019	45,786	0	190,631	143.6	1,180.9
1963-64	10.1	67.5	0	5,216	0	77,979	8,686	46,846	46,227	170,392	0	1,254.5
1964-65	12.4	82.2	1,297	5,798	0	88,694	7,856	52,672	65,775	164,828	0	1,324.5
1965-66	15.7	82.8	2,325	5,558	8,754	80,772	6,346	50,880	108,918	158,599	0	1,422.8
1966-67	19.0	93.2	5,281	6,426	8,704	88,172	10,886	46,876	6/ 119,249	159,445	0	1,571.6
1967-68	20.6	87.4	1,279	5,949	5,270	77,520	8,282	48,410	6/ 17,270	160,695	0	1,404.3
1968-69	16.1	87.4	601	6,124	0	87,799	7,103	53,003	6/ 102,403	162,774	0	1,466.8
1969-70	45.0	101.6	961	5,894	15,340	88,747	4,840	54,285	95,520	160,241	0	1,823.1
1970-71	64.0	103.5	1,715	6,582	20,623	93,776	7,311	48,396	6/ 52,820	152,076	190.9	1,845.7
1971-72	69.3	114.9	5,209	6,361	27,560	106,506	4,347	38,508	6/ 39,640	153,102	254.0	2,010.8
1972-73	48.3	112.4	3,077	6,631	20,796	98,883	0	33,216	-3,420	109,588	0	2,078.0
1973-74	0	162.4	3,739	7,752	25,713	132,506	0	43,824	0	200,247	0	2,100.3
1974-75	0	247.7	2,109	5,545	37,780	127,642	0	52,481	57,345	169,927	0	2,236.0
1975-76	0	257.8	4,608	5,790	54,720	142,295	0	56,138	70,677	194,668	0	2,075.1
1976-77	0	317.1	1,311	6,139	39,196	142,744	0	43,249	-13,793	171,706	0	2,407.3
1977-78	0	359.0	4,506	6,945	42,574	140,139	0	48,064	298	246,872	0	2,102.2
1978-79	0	256.6	6,596	7,651	0	146,050	0	45,547	0	134,766	0	2,458.5
1979-80	0	386.2	8,211	6,108	43,736	151,419	0	40,848	23,115	257,100	0	2,475.5
1980-81	0	384.1	10,800	5,540	52,172	159,466	0	41,500	41,000	268,000	0	2,697.5

1/ Includes limited quantities of substandard walnuts crushed for oil.

2/ Whole date equivalent. Free quantity includes dates that would not meet quality requirements for whole or pitted markets.

3/ Negative numbers indicate prior crop reserve sold for free use.

4/ This is not synonymous with utilization because economic abandonment and shrinkage have not been subtracted.
In 1971-72 economic abandonment and shrinkage were approximately 455,000 barrels.

5/ Kernel weight.

6/ Includes the following non-food disposition in tons:

1966 -- 18,783; 1967 -- 475; 1968 -- 1,059; 1970 -- 5,012; 1971 -- 46.

years 1973 through 1980.^{12/} Almond shipments more than doubled over this period. Date and cranberry sales have not shown comparable trends, but have varied substantially from year-to-year.

Market allocation under the raisin order has been highly sporadic. In some years, raisins declared surplus in the previous year have been used to supplement supplies (1972, 1976). In other years, surplus raisins have been forced into market outlets (including nonfood uses) that returned very little to growers. The raisin market is faced with a unique supply problem in the form of a variable production base. Raisin variety grapes are normally sold in three major outlets: fresh table use, wine, and raisins. To some degree, the raisin outlet is residual in the sense that changes in demand for table grapes or wine leave more or less grapes for drying. This leads to accentuated variation in raisin supplies and, consequently, uneven application of marketing order controls. During the last decade, the use of market allocation in raisins appears to reflect a goal of stabilizing price in the presence of unusual fluctuations in

^{12/} A 25-percent reserve has been declared under the almond order for the 1981-82 marketing season. The Almond Marketing Board justified this reserve request to the Secretary of Agriculture on the basis of a record U.S. almond crop that is 40 percent above last year's production, limited export opportunities due to record almond crops in major competing export countries, and a strong U.S. dollar, which makes U.S. almonds relatively more expensive to foreign buyers. This action is consistent with use of the order as a stabilization (rather than price-enhancing) tool.

supply rather than long-run price enhancement.

The quantities of walnuts declared reserve under the marketing order have varied positively with crop size and, at least until 1975, were increasing. This suggests use of the order to enhance rather than stabilize price. But in recent years, reserves have fallen while total production increased, and no marketing restrictions were imposed in 1978. Price differences between export reserve and free sales have narrowed, but some reserve walnuts eligible for food use have been diverted to low-return oil outlets. It appears that market allocation under the walnut order has been used mainly to stabilize prices in recent years, but that some vestiges of a price-enhancing goal remain.

Free filbert shipments (to the domestic inshell market) have exhibited no trend over the past 20 years, while restricted filbert shipments (to domestic shelled outlets and export markets) have climbed to a level exceeding free shipments. Prices for shelled filberts have been nearly equal to inshell (equivalent) returns in recent years, indicating that the order-induced allocation between markets has not been heavily restrictive.^{13/} Nonetheless, filbert acreage has been increasing recently at the same time as the application of controls has become more stringent.^{14/} We conclude that

^{13/} The shelled price is largely dictated by imports of shelled filberts, which normally exceed domestic sales.

^{14/} If acreage increases are in response to favorable prices for shelled filberts (the unrestricted market outlet), then the rationale for retaining restrictions on inshell sales is not apparent.

resource misallocation attributable to market allocation is distinctly possible in the case of filberts.

For the three orders allowing price discrimination through season-long prorates (navel oranges, valencia oranges, and lemons), chronic over-production is apparent. Navel orange shipments to processing have steadily increased, both absolutely and as a percent of total production. The processing market has consistently yielded growers negative returns. Valencia orange and lemon processing diversions have been more stable and processing returns more lucrative than those experienced by navel orange growers. But large on-tree price differentials between fresh and processed sales exist for all three commodities. There is no question that considerably more navel oranges, valencia oranges, and lemons are being sold to processors than would be without order-imposed restrictions on fresh sales.

There are obvious costs of resource misallocation associated with these three citrus orders. Moreover, for any given season, prices in the primary markets and grower returns are elevated relative to what they would be without the orders. The question of what prices would be in the long run without orders is more problematic. Orchard disinvestment would likely follow order termination, caused both by lower prices and greater price risk. Processing sales would decline, but the ultimate levels of fresh market sales and consumer prices for fresh fruit would depend on producer tradeoffs between expected prices and price risk. If price uncertainty were substantially increased by order termination, fresh prices could increase; otherwise fresh prices would likely decline.

Other efficiency effects of price discrimination due to the three orders are less direct than those related to resource allocation and price stability. Where handlers are assigned marketing allotments, competition among handlers is necessarily reduced. For example, a Western orange or lemon handler with access to exceptionally high quality fruit, efficient harvesting or packing methods, or lucrative sales arrangements cannot fully exploit these advantages through increased fresh-market sales because of weekly prorate constraints. Price competition may be limited because price cuts could yield sales orders in excess of allotments. However, constraints on competition are of a temporary nature. To the extent handlers are capable of returning higher prices to growers, they can attract additional production and thereby obtain a larger shipment prorate in subsequent years.

Constraints on interregional competition are evident for orders that allocate handler marketing allotments on a regional basis. For example, the California-Arizona orange orders assign weekly prorates to handlers separately by district within the producing area. Prorates are assigned to ensure that each handler is permitted to ship the same proportion of total fruit under his or her control to the restricted fresh domestic market. But because of proximity to ports, quality of fruit, and buyer preferences, Southern California shippers can export large volumes of fruit at prices comparable to those prevailing in the fresh domestic market. Consequently, Southern California handlers in recent years have usually undershipped their weekly allotments, while handlers in Central California have shipped the maximum allowed. The orders do provide that handlers in a district can borrow unused allotments from handlers in the other districts to

be, in most cases, paid back the following week.

Price discrimination provisions can slow the achievement of scale economies in plants engineered for higher volumes. Shipping limitations imposed on handlers can penalize low-cost operations by slowing their rate of growth. Regardless of cost advantages, sales in a given year would be largely dictated by order-imposed allotments, which do not differentiate among handlers on the basis of relative efficiency. At least within a season, cost savings could not induce expanded sales to the extent handler allotments are binding.^{15/} As a consequence, incentives to reduce handling costs may also be diminished, except to the extent that profits could be increased. On the other hand, since handlers can forecast volume with greater certainty, they can plan for more efficient utilization of handling facilities.

Finally, price discrimination provisions may be partly responsible for forcing edible commodities into nonfood uses. "Non-competitive" outlets specified in some market allocation orders include nonfood uses. Occasionally, even unrestricted secondary food outlets such as processing cannot absorb available quantities. For example, supplies of navel oranges for processing in the 1980-81 season periodically exceeded processing capacity. This led to some use of oranges as cattle feed, which temporarily returned more to growers than processing outlets. But economic abandonment of perishable commodities occurs in the absence of order controls

^{15/} In the long run, growers would be expected to shift their handler allegiance according to relative returns paid by different handlers.

because the sale of edible food in food markets is not always profitable. Therefore, it is impossible to determine exactly how much, if any, food waste is order-induced.

Producer allotments

Three orders (celery, hops, and spearmint oil) use producer allotments as their primary supply management provision. Producer allotments are also authorized under the cranberry order, but have not been used to date. In a theoretical sense, producer allotment provisions permit producers to achieve a monopoly--output could hypothetically be restricted to levels that maximize producer net returns, resulting in large welfare losses relative to perfect competition. Actually, competition from outside the order, including imports, limits the magnitude of price gains from restricting sales.

Producer allotments have the potential for inducing industry underinvestment, in contrast to the overinvestment potentially linked to price discrimination provisions. Two measures are important in appraising the extent to which these orders have prevented resources from entering covered industries: (1) the nature of restrictions on entry, and (2) the extent to which actual sales fall short of allotments.

The hops order has no provision for routinely granting allotments to new producers; allotments to new producers and increased allotments to existing producers can be recommended by the order committee for approval by the Secretary of Agriculture. The celery and spearmint oil orders provide for the annual granting of new allotment not to exceed 3 and 1 percent, respectively, of

total existing allotment.^{16/} All three active producer allotment orders permit transfers of allotments, both among existing producers and between existing and new producers.

Shown in table 12 are allotments and commodity sales for two of the three producer allotment orders (the spearmint oil program did not begin until 1980). Celery sales have consistently fallen well below allotments by an average of 18.5 percent between 1965 and 1980. Hop sales averaged 6 percent less than allotments over the same period, and aggregate sales exceeded allotment in 1972.^{17/}

While data series on the market value of transferred allotments do not exist, there is evidence that for both hops and spearmint oil, the cost of purchasing or leasing quota for new entry or expansion is considerable. Combined with the limited allocation of new allotment, this is persuasive evidence that these orders are being used to restrict supply. More specifically, the cost of marginal production is artificially elevated by the market value of allotment transfers. This potentially impedes growth and entry, even though all existing producers may not sell as many hops as their full allotment permits. The same tendency exists under the celery order.

^{16/} Expanded allotments are to begin in the 1982-83 season for spearmint oil.

^{17/} Individual producer deliveries of hops in excess of their marketing allotments are placed in a reserve pool. The title to these reserve hops remains with the grower, but disposition is controlled by the order administrative committee.

But entry and expansion are apparently not as economically attractive as in the hops and spearmint oil industries, since allotment transfers have carried a zero or negligible price, at least in recent years.

Balanced against the resource misallocation cost of producer allotments are possible benefits of more stable prices and incomes to producers. However, for two producer allotment commodities, hops and spearmint oil, storage is a feasible option and could provide an alternative to stabilization by allotments.

In addition to reducing competition among growers, producer allotments reduce competition among handlers in the same fashion as price discrimination provisions. Also, product destruction may be encouraged. The celery order has no provision for disposition of production in excess of the allotments of individual growers, although secondary food outlets for fresh celery exist in the form of canning and freezing. The hops and spearmint oil orders have reserve pools for excess production. But for hops, reserve pool contents have periodically been diverted to mulch and fertilizer.

Reserve Pools

Reserve pools are the primary supply management tool in the tart cherry and prune orders, and are also used in orders for raisins, hops, and spearmint oil. Depending primarily on the disposition of reserves, this provision may have positive or negative efficiency effects. If reserves are used to remove production during large crop years and supplement supplies in small crop years, net social welfare could be greater than without storage. If pools accumulated during years of large crops are diverted to secondary markets or nonfood uses, then the effect on economic efficiency

Table 12--Producer allotment orders, total allotments and total sales,
1960-1980

Season beginning	Florida celery		Hops	
	Allotment <u>1/</u>	Sales	Allotment	Sales
	----- <u>1,000 crates</u> <u>2/</u> -----		----- <u>1,000 pounds</u> -----	
1960	<u>3/</u>	7,068	<u>4/</u>	45,652
1961	<u>3/</u>	7,122	<u>4/</u>	35,454
1962	<u>3/</u>	7,132	<u>4/</u>	44,072
1963	<u>3/</u>	7,372	<u>4/</u>	51,336
1964	<u>3/</u>	7,573	<u>4/</u>	53,081
1965	8,055	7,770	<u>4/</u>	56,060
1966	7,887	7,350	56,173	54,620
1967	7,887	6,867	55,753	49,498
1968	7,887	6,997	51,497	43,733
1969	7,887	6,128	46,063	41,592
1970	7,887	7,174	48,208	45,619
1971	7,887	7,069	49,601	48,057
1972	8,372	7,366	49,377	52,463
1973	8,797	6,071	55,528	55,152
1974	8,354	6,475	60,270	57,796
1975	8,326	5,686	60,270	55,593
1976	9,223	5,529	60,270	57,538
1977	8,082	5,979	60,270	54,767
1978	8,433	7,941	60,270	55,424
1979	9,644	7,900	63,234	55,254
1980	8,601	5,700 <u>5/</u>	76,424	75,816
1981			78,280	

1/ Quantity that may be sold in fresh market outlets. Sales figures are for the fresh market.

2/ 60 pounds per crate.

3/ Order effective November 15, 1965.

4/ Order effective July 22, 1966.

5/ Preliminary.

is the same as for price discrimination provisions.

Tables 13 and 14 show the size and the method of disposition for the prune and tart cherry reserve pools. Six reserve pools have been established for prunes since 1960, with four pools extending beyond the end of a season. Prune reserve pools were particularly burdensome during the 1969-71 seasons. Most of the 1970 and 1971 pools were disposed of in nonfood outlets or the reserve obligation met through grower destruction of green fruit before harvest. Reserve pools for tart cherries have been established three times since the order was initiated. In 1975, the entire pool was released before the end of the season. Parts of the 1972 and 1980 pools were carried forward for sale in the following seasons. The tart cherry order also permits growers to fulfill their reserve obligation through orchard diversion (nonharvest). The percentages of the total 1972, 1975, and 1980 tart cherry crops left unharvested to meet reserve obligations were about 7.5, 2, and 1 percent, respectively.

Given the infrequent establishment of reserve pools for tart cherries, we conclude that these provisions have had a stabilizing influence on the affected markets. Unlike price discrimination provisions and producer allotments, reserve pools have a symmetrical effect on price variability--price run-ups are damped by release of pools in short crop years, and price drops are damped by pool storage.

The periodic product destruction and diversion to nonfood uses associated with reserve pools represents a high social cost in the form of wasted resources. But it is possible that economic abandonment (crops not harvested due to low farm prices) could

exceed order-related waste if the reserve pool outlets were not available to growers. Given the occurrence of economic abandonment in fruit and vegetable crops not covered by marketing orders, we are unable to determine if such pooling affects waste.

Minimum Quality Standards

Minimum shipping standards for size, grade, and maturity are the most pervasive provisions in Federal marketing orders for fruits and vegetables. Crops produced under all orders except spearmint oil are subject to quality standards. In 22 orders, quality standards are the only provision authorized that can influence the level of shipments.

Quality standards affect economic efficiency through their effect on both supply and demand. On the supply side, standards can reduce shipments, thereby increasing price and forcing excessive resources to be used in production of the affected commodity. If commodities not meeting minimum standards are diverted to processing, the standards may also serve as a price discrimination tool. Efficiency losses on the demand side relate to a possible reduction in the range of consumer choice.

Efficiency gains from the use of standards are also possible. To the extent consumer demand is influenced by quality, demand may be increased by the imposition of minimum standards. Conversely, the absence of standards may result in poor quality shipments that diminish the overall quality "image" of the commodity in the eyes of consumers. Moreover, marketing costs, and presumably wholesale and retail margins, should be smaller to the extent standards yield consistent quality and fewer rejected shipments and losses to retailers.

Table 13--Reserve pools under Federal marketing orders for California dried prunes, 1960-61 to 1980-81

Marketing year	Production	Reserve	Disposition of reserve			
			Current year sales		Carried over	Nonfood or not harvested
			Commercial	Section		
			32 1/	tons (natural condition)		
1960-61	139,000	0	---	---	---	---
1961-62	139,000	0	---	---	---	---
1962-63	139,000	0	---	---	---	---
1963-64	148,000	0	---	---	---	---
1964-65	180,000	0	---	---	---	---
1965-66	167,000	33,421	33,421	---	---	---
1966-67	132,000	0	---	---	---	---
1967-68	164,000	0	---	---	---	---
1968-69	153,000	22,929	11,443	11,486	---	---
1969-70	130,000	16,885	---	3,105	2/ 13,115	635
1970-71	226,000	72,831	---	13,889	2/ 9,341	49,601
1971-72	156,000	41,434	5,628	10,570	2/ 79	25,157
1972-73	77,000	0	---	---	---	---
1973-74	205,000	0	---	---	---	---
1974-75	142,000	13,601	---	---	2/ 13,601	---
1975-76	149,000	5,958	5,958	---	---	---
1976-77	148,000	0	---	---	---	---
1977-78	159,000	0	---	---	---	---
1978-79	132,000	0	---	---	---	---
1979-80	136,000	0	---	---	---	---
1980-81	168,000	0	---	---	---	---

1/ Section 32 of Public Law 320, 74th Congress (surplus removal)

2/ Disposition of carryout was as follows:

1969-70 carryout - 22 tons, commercial; 2,838 tons, section 32; 10,255 tons to nonfood
1970-71 carryout - 1,626 tons, section 32 and 7,715 tons to nonfood
1971-72 carryout - 79 tons, commercial
1974-75 carryout - 5,979 tons, commercial and 7,621 tons, section 32

Table 14--Reserve pools under Federal marketing orders for tart cherries,
1971-72 to 1980-81 1/

Marketing year	Production	Reserve	Disposition of reserve		
			Current year	Carried over	Nonfood
			sales		or not harvested
-----			million pounds	-----	
1971-72	250.7	0	----	----	----
1972-73	307.5	41.9	14.3	4.7	22.9
1973-74	148.6	0	----	----	----
1974-75	246.6	0	----	----	----
1975-76	273.0	33.0	27.4	----	5.6
1976-77	118.1	0	----	----	----
1977-78	189.4	0	----	----	----
1978-79	164.8	0	----	----	----
1979-80	148.2	0	----	----	----
1980-81	198.1	44.6	16.8	25.9	1.9

1/ The tart cherry marketing order became effective in 1971.

Whether quality standards yield welfare gains or losses depends on how they are used. Desirable standards from the standpoint of economic efficiency would ensure uniform quality over time irrespective of crop size and prohibit shipment only of demonstrably undesirable produce. The criterion for "demonstrably undesirable" would include health risks, high incidence of buyer rejection for spoilage or other defects, high retail "shrink," and low maturity leading to consumer rejection. Undesirable minimum standards would force culling of wholesome produce that would otherwise find willing and satisfied buyers.

Examination of minimum quality standards imposed under orders shows four basic ways in which they are used:

- * Some minimum standards are constant over the season and do not vary from year to year. These are set at low levels of quality, at least as indicated by USDA grades. Quantity ineligible for sale appears to be neither very large nor would it be very remunerative to growers if sold. Used in this way, standards meet the criteria noted above for positively affecting economic efficiency.
- * For another set of commodities, standards vary within the season, but the variation is quite consistent from year to year. Typically, lenient quality standards apply early and late in the marketing season, and more stringent standards are imposed during the peak of the season. This reflects a definition of "quality" that varies with availability, and could be interpreted as evidence of the use of standards to limit

quantity when supplies are plentiful. But for most of these commodities--for example, Florida and Texas citrus and fall potatoes--large supplies normally sold for processing assure broad availability of fresh-market product meeting the standards. Use of such variable standards does limit availability of lower-priced, low quality supplies during season peaks, at least from the affected production region.

- * A third type of standard varies up and down from season to season. This is inconsistent with a uniform standard restricting only undesirable produce, and would seem to confuse buyers. It can, however, help stabilize quantities available in the marketplace.
- * Finally, some standards have been gradually raised over time. Such increases do not appear to have tightened availability or greatly increased culling. Apparently growers have generally been able to meet the higher quality standards by practices, such as early season thinning, that increase average fruit size or quality without reducing salable production per acre.

There are two special quality standards that may have significant supply-reducing effects. These are the "limited use" provision in the olive order and the "undersized" provision in the prune order. In both cases, the orders permit elimination of demonstrably usable product from primary markets. Hence, "limited use" and "undersized" in these orders may be euphemisms for supply restriction.

However, there is little basis to conclude that, in general, size, grade, and maturity standards have a significant effect on total supplies. In addition to the evidence above, handler support of standards suggests that standards do not materially reduce volume since handlers do not usually profit from restricted volume. Also, quality exemptions to growers who cannot meet standards appear to be liberally granted under quality control orders. And standards are frequently modified within a season when weather, disease, or insect damage might severely limit eligible volume.

Quality standards appear to have a positive effect on product "image," thereby enhancing demand. We find convincing arguments that a few shipments of substandard produce may severely depress demand for subsequent shipments during that marketing season. Also, marketing costs beyond the packing house are likely reduced by the use of minimum quality standards, which can reduce product losses and load rejections, and thereby increase handling efficiency in wholesaling and retailing.

Minimum quality standards do limit the range of quality that would otherwise be available to consumers. But growers do not usually find it profitable to ship all their production whether or not orders specifying minimum quality standards apply. Consequently, we are not able to ascertain the magnitude of production restricted from sale by minimum standards.

Import Quality Standards

The effects of quality standards imposed on imports in conjunction with marketing order regulations must be viewed separately from effects of domestic quality control. Conceptually, import standards are non-tariff trade

barriers; their use has economic efficiency implications for importers, exporters, and foreign governments as well as for the domestic production, marketing, and consumption sectors.

We were not able to address the important questions of how large a trade barrier import standards represent, how costly the standards are to foreign suppliers, or how much wholesome product is restricted from entering the United States. A comprehensive study would be required to properly answer these questions. However, we offer the following tentative observations on the likely effect of import standards, based mainly on a 1976 General Accounting Office report and related USDA comments (citation in Appendix B).

- * To the extent imports are directly substitutable for domestic production, the same efficiency costs and benefits apply to import standards as to domestic standards. In particular, where imports are important, domestic producers share product image with foreign suppliers. If standards imposed under orders are uniform and reasonably reflect distributor and consumer perceptions of minimum desirable quality, then the standards do not severely restrict imports and potentially avoid deterioration of demand.
- * If imports possess significantly different characteristics than the applicable order commodity, then standards may be inequitable and costly to U.S. consumers. USDA attempts to compensate for inherent differences between affected imports and order commodities, but adjustments are necessarily arbitrary. For example, the maximum permitted

number of capstems per pound for imported Sultana raisins, which are smaller than domestic raisins, is greater than permitted under the marketing order standard. But no distinction is made in the case of other possible differences between imports and domestic production. For example, filbert importers have complained that variety differences between U.S. and foreign filberts make standards difficult to meet.

- * Import standards are probably more difficult for exporters to meet for commodities where different orders apply at different times during the year. Domestic suppliers under an order face uniform standards; foreign suppliers face standards that change according to what U.S. order is in effect.
- * Import standards probably also serve as higher trade barriers when order quality standards fluctuate from year to year or within a season.

Our overall conclusion is that import standards, just as domestic quality minimums, prevent some produce from reaching consumers. Moreover, prohibited imports falling below minimum standards would likely trade at lower consumer prices. But we are unable to determine if import standards have materially restricted agricultural imports or shut out foreign suppliers.

Market Flow Provisions

We define here as market flow provisions shipping holidays and prorates that are limited as to duration and number of times implemented during a marketing season. Excluded are the

Western citrus orders that permit unrestricted prorates, since these are used for seasonal allocation and are covered under price discrimination provisions.

Shipping Holidays - The intent of shipping holidays is to prevent buildups of supplies during periods of restricted trade activity. But direct buying and packing to order diminish the likelihood of such gluts occurring in today's marketing system. Some retailers have argued that shipping holidays encourage sale of "old" fruit, since they must order in anticipation of packing house shutdowns. Some handlers feel substantial sales are lost to competing producing regions when holidays are imposed.

A possible efficiency loss related to shipping holidays concerns their effect on shipments for export. Packing for export is usually exempted from holidays. But quality requirements for export shipments may differ from domestic quality requirements. When packing for export during a shipping holiday, graded and packed fruit ineligible for export must be stored until holiday restrictions are lifted.

Prorates - Maximum shipping allotments per week or other designated period are also intended to prevent temporary market gluts and corresponding depressed prices. In theory, such shipping constraints may result in efficiency losses similar to seasonal allotment provisions. In practice, prorates, except for California-Arizona navels, valencias, and lemons, are infrequently imposed and do not appear to significantly limit total seasonal sales. The most active use of prorates elsewhere has been under the two orders for Florida grapefruit, which permit the establishment of prorates over much of the harvest season. But this prorate authority has seldom been invoked.

Neither shipping holidays nor prorates appear to be used to materially restrict seasonal supplies. To a limited extent, they serve to smooth out product flow over the season and thereby potentially contribute to more efficient use of handling and distribution facilities. But to the extent direct sales have replaced consignment sales, the rationale for their use has diminished.

Pack and Container Standardization

Specifications regarding permitted containers and pack configurations prevent proliferation of packages. Mandatory standards improve efficiency to the extent market information is improved and the enforced uniformity reduces handling costs and prevents waste. And container costs may be lower for handlers if economies to scale in container manufacturing exist. But innovations in packaging may be stifled--cost-reducing packaging technology could be adopted more slowly where orders set requirements.

Research and Advertising Provisions 18/

Research - Most fruit and vegetable orders authorize handler assessments for collecting revenue to fund production and marketing research, usually conducted by universities. By and large, research so funded is directed toward production problems (insects, plant diseases), new variety development, yield-improving cultural practices, and post-harvest handling problems.

18/ This discussion refers to programs authorized under the Agricultural Marketing Agreement Act and not to programs authorized by special research and promotion acts such as exist for eggs and potatoes.

The effect of order-funded research on economic efficiency is positive. In general, these programs have permitted producers to respond rapidly to acute yield-reducing problems and to sponsor longer term yield-increasing and cost-reducing production and marketing research.

Advertising - Assessment for advertising is a relatively new provision in orders, and many orders have recently sought advertising authority. Advertising programs funded by orders involve generic promotion with the exception of almonds, which also permits brand advertising to be credited against the assessment.

Advertising contributes positively to economic efficiency to the extent that it helps consumers make better-informed decisions. But advertising may merely raise the overall marketing cost structure if practiced by sellers of commodities which are partial substitutes for each other. There is insufficient evidence to determine the net efficiency of advertising in general or of advertising authorized by specific order programs.

Cost of Order Programs

All orders involve monetary costs in addition to any efficiency losses. These costs include handler assessments for order administration and funding of research and advertising, public (USDA) administration costs, and compliance costs incurred by handlers and growers.

Handler assessments for 1979-80 totaled about \$10 million. These are shown by marketing order in tables 15-18. As a proportion of product value, these assessments are very small.

USDA costs for administering marketing orders and agreements are

Table 15--Assessments and expenditures, citrus fruit marketing orders, 1979-80

Marketing order	M.O. no.	Assessment rate	Expenditures			
			Adminis- tration	Advertising	Research	Total
		¢/ctn <u>1/</u>	-----Dollars-----			
Fla. citrus	905	0.275	207,912	0	0	207,912
Texas oranges and grapefruit	906	4.5	89,911	220,000	28,000	351,911
Calif.-Ariz. navel oranges	907	1.65	407,533	0	0	407,533
Calif.-Ariz. valencia oranges	908	1.8	316,375	0	0	316,375
Calif.-Ariz. lemons	910	3.7	403,367	0	0	403,367
Fla. limes	911	<u>2/30</u>	78,657	146,834	0	225,491
Fla. Indian River grapefruit	912	0.11	26,039	0	0	26,039
Fla. Interior grapefruit	913	0.2	26,033	0	0	26,033

1/ Carton weights are as follows: Fla. oranges, 45 lb; Fla. grapefruit, 42.5 lb; Fla. tangerines, 47.5 lb; Fla. tangelos, 45 lb; Tex. oranges, 42.5 lb; Tex. grapefruit, 40 lb; Calif.-Ariz. oranges, 42.5 lb; Calif.-Ariz. lemons, 40 lb; Fla. limes, 55 lb.

2/ Cents per bushel.

Table 16--Assessments and expenditures, noncitrus fruit marketing orders, 1979-80

Marketing order	M.O. no.	Assessment rate 1/	Expenditures			
			Adminis- tration	Advertising	Research	Total
-----Dollars-----						
Fla. avocados	915	25¢/bu	92,914	159,334	125,000	264,748
Calif. nectarines	916	10¢/lug	131,354	918,459	16,449	1,066,735
Calif. Tree Fruit Agreement	917		316,677	1,716,681	35,377	2,071,735
Calif. plums		11.5¢/lug				
Calif. peaches		10¢/lug				
Calif. pears		13.5¢/ctn				
Ga. peaches	918	1.1¢/bu	17,538	0	0	17,538
Colo. peaches	919	1.8¢/bu	1,000	0	0	1,000
Wash. peaches	921	\$1.20/ton	11,335	0	0	11,335
Wash. apricots	922	\$1.30/ton	2,952	0	0	2,952
Wash. sweet cherries	923	\$0.90/ton	27,290	0	0	34,790
Wash.-Oreg. prunes	924	\$1.00/ton	16,749	0	2,000	18,749
Calif. Tokay grapes	926	10¢/lug	42,232	122,725	0	164,957
Winter pears	927	1¢/box	60,767	0	32,231	92,998

Continued

Table 16--Assessments and expenditures, noncitrus fruit marketing orders, 1979-80--continued 1/

Marketing order	M.O. no.	Assessment rate 1/	Expenditures			
			Adminis- tration	Advertising	Research	Total
-----Dollars-----						
Hawaii papayas	928	6¢/lb	135,106	196,840	13,622	345,568
Cranberries	929	0.03¢/lb	87,640	0	0	87,640
Tart cherries	930	\$1.20/ton	91,880	0	0	91,880
Wash.-Oreg. pears	931	0.5¢/box	18,933	0	0	18,933
Calif. olives	932	\$14.33/ton	105,174	976,256	41,776	1,120,206

1/ Container weights are as follows: Fla. avocados, 55 lb/bu; Calif. nectarines, 24 lb/lug; Calif. plums, 28 lb/lug; Calif. peaches, 23 lb/lug; Calif. pears, 36 lb/ctn; Ga. peaches, 48 lb/bu; Calif. Tokay grapes, 23 lb/lug; Winter pears and Wash.-Oreg. Bartlett pears, 45 lb/box.

Table 17--Assessments and expenditures, vegetable marketing orders, 1979-80

Marketing order	M.O. no.	Assessment rate	Expenditures			
			Administration	Advertising	Research	Total
		¢/cwt	-----Dollars-----			
Idaho-Oreg. potatoes	945	0.26	49,744	0	0	49,744
Wash. potatoes	946	0.2	17,050	0	0	17,050
Oreg.-Calif. potatoes	947	0.2	30,900	0	0	30,900
Colo. potatoes	948					
Area 2		0.393	22,500	0	0	22,500
Area 3		0.5	1,765	0	0	1,765
Va.-N.C. potatoes	953	0.25	11,125	0	0	11,125
Idaho-Oreg. onions	958	7.25	66,200	250,000	44,000	360,200
So. Tex. onions	959	4.0	55,000	0	82,886	137,886
Fla. tomatoes	966	16.67	134,000	0	0	134,000
Fla. celery	967	4.16	75,000	100,000	0	175,000
Tex. lettuce	971	5.68	25,000	0	10,000	35,000
So. Tex. melons	979		54,500	0	17,000	71,500
Cantaloups		3.75				
Honeydews		5.0				

Table 18--Assessments and expenditures, speciality crops marketing orders, 1979-80

Marketing order	M.O. no.	Assessment rate	Expenditures			
			Administration	Advertising	Research	Total
-----Dollars-----						
Calif. almonds	981	2.7082¢/lb (kernel wt)	260,660	\$8,866,000 <u>1/</u>	311,952	9,438,612
Oreg.-Wash. filberts	982	0.1711¢/lb (inshell)	42,425	0	0	42,425
Calif. walnuts	984	0.1841¢/lb (kernel wt)	125,551	0	174,594	300,145
Calif. dates	987	4.2204¢/cwt	15,237	159 <u>2/</u>	0	15,396
Calif. raisins	989	\$0.725118/ton <u>3/</u>	203,005	0	0	203,005
Hops	991	0.3929¢/lb	208,664	0	5,770	214,434
Calif. prunes	993	\$0.973603/ton <u>3/</u>	132,485	0	0	132,485

1/ Includes promotion costs and \$8,536,687 credited for brand advertising.

2/ Includes promotion costs.

3/ Free-natural condition

estimated at \$2 million for 1979-80, or about \$42,300 per program.^{19/} These costs are also small in comparison to the values of the commodities regulated.

Compliance costs are more difficult to measure, since they consist partly of paperwork burden. However, based on our industry interviews, we conclude that most of the information required of growers and handlers for order administration is routinely generated through customary business practices. Few handlers complained of order-related paperwork burdens.

One type of compliance cost that is measurable is mandatory inspection for orders using quality standards. For example, inspection costs under the California Tree Fruit Agreement in 1979-80 were 4.8¢ and 5.5¢ per lug respectively for peaches and plums. Assessments per lug for these two commodities were 10¢ and 13¢ respectively, which covered inspection as well as advertising, research and order administration. But the full cost of inspection cannot be attributed to marketing order quality standards. Many handlers would voluntarily use Federal inspection absent marketing order requirements, and many buyers would insist on it. Table 19 shows total inspection costs for selected commodities.

Market Information

Another efficiency effect of orders not specific to certain provisions derives from the information generated by order programs. As part of the order administration process, each administrative committee prepares a marketing

policy statement that analyzes crop and market conditions prior to harvest. During the marketing season, detailed shipping information is provided by handlers for purposes of administering the orders. Following the season, most of the orders publish and distribute a statistical review.

Information generated under orders that is not firm-specific is generally available to growers and handlers. Some of this information is available from other sources, and some, especially inventory and intraseasonal shipment data, is not otherwise available. In any case, orders facilitate the dissemination of information, regardless of its source.

There is little dispute about the positive effects of market information on economic efficiency. However, whether these benefits warrant the costs or whether there are more efficient methods of providing such information remains an issue. Some efficiency benefits are firm-related. For example, better-informed management decisions lead to more socially desirable resource allocation. Other benefits are broader, relating to effects of the distribution of information on competitive policy in general. Moulton and Garoyan identify these benefits:

"Information is an essential structural component of economic theory. Its availability to all participants in the marketing system is a necessary condition for perfectly competitive markets. Its unequal distribution creates selling costs not found in perfectly competitive markets and is characteristic of imperfect competition. Its availability and interpretation is

^{19/} This is the prorata share of the Agricultural Marketing Service budget associated with order operations.

Table 19--Inspection costs for selected commodities under marketing orders,
1980-81 crop

Marketing order	M.O. no.	Inspection cost
<u>Fruits</u>		<u>Dollars</u>
Florida citrus	905	3,247,250
Texas oranges and grapefruit	906	193,500
Florida limes	911	77,869
Florida avocados	915	77,867
California peaches, plums, pears, and nectarines	916-917	2,144,125
Washington apricots	922	4,000
Washington sweet cherries	923	107,670
California Tokay grapes	926	50,000
<u>Vegetables</u>		
Idaho-Oregon potatoes	945	488,400
Washington potatoes	946	329,000
Oregon-California potatoes	947	503,640
Idaho-Oregon onions	958	270,670
So. Texas onions	959	180,000
Florida tomatoes	966	797,000
Texas lettuce	971	38,470
So. Texas melons	979	91,400
<u>Specialty crops</u>		
California almonds	981	246,000
California dates	987	159,700
California raisins	989	2,765,810

a key element in oligopoly theory."^{20/}

Income Distribution

There are numerous distributional effects associated with marketing orders. And, these redistribution effects differ according to provisions employed.

Some of these effects involve income transfers from consumers to producers. In the short run, growers' incomes are increased by orders that reduce quantities marketed or successfully discriminate among markets. But over the long run, this effect is dissipated since any increase in returns above "normal" levels attracts new entry and increased production. The major exceptions occur under the producer allotment programs which bar or greatly restrict entry. The owners of such allotments may obtain continuing higher returns which would be reflected in the values of the allotments. But the returns earned by management and labor for new growers, who must buy allotments, are essentially the same as would prevail without the order.

The owners of land or other resources which are uniquely suited to the production of a crop for which a marketing order successfully increases total demand may also gain some long-term income enhancement. This effect is believed to be relatively unimportant since, for most crops covered by marketing orders, additional

land of similar productivity could be brought into production at costs not greatly higher than for land already used.

Finally, for those cases in which seasonal allocation, storage, grade, size, and maturity standards, pack and container regulations, and research and promotion increase overall efficiency, some benefits will accrue to growers, but most benefits are probably passed on to consumers in the long run.

Other distribution effects of marketing orders entail transfers among and between producers, handlers, and consumers. Provisions that affect the allocation of production among markets differentially affect consumers within these markets. Consumers in primary markets, where supplies are restricted, lose; consumers in secondary markets gain. Primary and secondary market handlers, who profit from volume, are similarly affected, at least in the short run. In the long run, handlers would be expected to adjust plant scale and flexibility to order-induced allocation of volume.

For price discrimination orders, secondary markets are mainly export (tree nuts and dried fruits) and processed (California-Arizona oranges and lemons) outlets. If social welfare concerns are limited to the domestic sector, income transfers from domestic to foreign consumers have negative value. Processed outlets for California-Arizona oranges are minor in comparison to those for the Florida crop. Changes in California-Arizona navel and valencia orange supplies for processing have little effect on processed orange product prices, while fresh market prices are very sensitive to changes in marketings.

^{20/} Moulton, Kirby S. and Leon Garoyan, "Market Information and National Competition Policy," in Market Information and Price Reporting in the Food and Agricultural Sector, N.C. Project 117, Monograph No. 9, August 1980.

Reserve pool and market flow provisions cause income transfers across time. Producers receive more, and consumers pay more during periods of reserve pool additions and imposition of shipping constraints; opposite income effects prevail during pool releases and when constraints are lifted.

A major redistribution effect of producer allotments is between producers. Producers holding marketing quotas gain; those who must purchase or lease quotas lose. Usually, this entails an income transfer from new to existing producers. Quality control provisions benefit producers of high quality produce at the expense of low quality producers to the extent quality is heterogeneous among producers. By restricting shipments of substandard sizes and grades, minimum quality standards also result in income transfers between consumers who prefer or can only afford lower quality to those preferring higher quality.

Entrepreneurial Independence

A reduction in individual producer and handler decision-making flexibility under fruit and vegetable marketing orders is self-evident; industry goals as defined by order administrative committees supersede individual goals. The relevant question is to what extent individual decision-making is willingly sacrificed under order operations.

If majority voting under marketing order referenda is indicative, then most individuals appear to willingly accede individual freedom in return for perceived aggregate gains. Specifically, the majority of producers have supported existing orders at the time of their initiation or amendment. However, the Act permits cooperatives to vote for their members as a bloc. This leads to the possibility that a considerably

smaller proportion of producers favor an order than indicated by referenda results. Bloc voting could conceivably lead to approval of an order or amendment while a majority of producers were, in fact, opposed.

Approval of an order or amendment in referendum is based on votes cast or proportion of total voting production represented. So, there are other possibilities that fewer than the indicated percentage majority of all growers approve. In particular, a relatively few large producers could theoretically be capable of initiating or amending an order over the objections of many smaller producers.

Administration of marketing orders through grower-handler committees is representative government. Also, many orders contain nomination procedures that attempt to assure equitable representation by producing district and among growers affiliated with cooperatives and independent growers. But it is unlikely that all producers and handlers are equally represented. In addition to interest, committee members must have the necessary time and resources to serve.

Some order provisions entail greater restrictions on individual choice than others. Producer allotments, seasonal handler allotments, and season-long pro-rates are the most binding constraints to free choice, since they impose absolute sales restrictions. Market flow provisions constrain only the timing of shipments, while quality and pack standards constrain product form decisions. Research and promotion under orders are funded by mandatory assessments on handlers that, in turn, lower grower returns, but these seldom generate producer or handler complaints. An exception is brand advertising under the almond order, which imposes a

requirement on handlers that unequally benefits handlers according to their size and the nature of the markets in which they sell. Small handlers or those selling only to export outlets would have little incentive to develop a brand compared to large integrated handlers selling primarily in domestic markets.

Number and Size of Farms

Preservation of small or "family" farms is frequently cited as a goal of agricultural policy. This is based partly on socio-political arguments--the Jeffersonian perspective of the rugged individualistic farmer comprising the keystone of democracy. But support is also based on considerably greater pragmatism. A sharp reduction in farm numbers can have repercussions on the service and trade sectors of rural communities. Also, some persons fear that agricultural production decisions made in the board offices of conglomerate corporations may not adequately consider the interests of rural people.

Others argue that small farms are inconsistent with economic efficiency, and that programs which disproportionately benefit small farms prevent achievement of scale economies and are costly to society.

On net, fruit and vegetable marketing orders tend to preserve existing farm structure. They help preserve small farms to the extent the existing structure is unconcentrated. Provisions with the most direct structural effect are producer allotments that limit entry. Provisions involving handler shipment quotas--including market allocation, reserve pools, and season-long prorates--permit all producers to share the more lucrative primary markets, each in proportion to the amount produced. This restriction on competition slows

the exit of smaller producers as well as small handlers.

The price and income stabilization properties of orders also tend to preserve smaller farms. Large producers, especially diversified corporations, may be better able to financially withstand successive years of low prices because of larger capital bases and the tax advantages that can result from spreading losses among profitable and unprofitable enterprises.

There are some features of marketing orders that favor larger over smaller producers. While most orders exempt on-farm direct grower sales from regulation, some direct sales outlets likely to be used by small farmers--for example, farmers' markets and "produce wagon" sales--are regulated. A grower using these outlets would be subject to the same inspection and reserve requirements as a large handler selling directly to retailers. Also, smaller growers would be less likely to serve on administrative committees. Consequently, committee recommendations may be biased toward the preferences of larger growers.

Summary of Marketing Order Effects

In the preceding assessment of order effects, economic efficiency gains and losses were identified. Effects of other broad indicators of social and economic welfare--income distribution, entrepreneurial independence, and number and size of farms--were also noted. The analysis was made without regard to alternative means of achieving the "orderly marketing" objectives of order legislation. That is, we evaluated what orders do, not whether there are preferable alternatives to orders as they presently exist. The latter issue is addressed in the following section of this report.

Economic efficiency is a goal valued by most of society. Efficiency gains and losses attributable to marketing orders can, therefore, be characterized as benefits and costs from a social welfare perspective. However, an assessment of net benefits would require considerably more empirical evidence than is presently available or, alternatively, application of subjective judgment regarding the relative values of benefits and costs.

For the other welfare indicators, performance norms are equivocal. Different segments of society and different individuals within these segments have divergent notions of what is an "appropriate" distribution of income, how much entrepreneurial independence is "desirable," and what is an "adequate" number of farming units. The absence of generally accepted norms precludes categorizing effects as benefits and costs. Discussion of how marketing orders influence these social welfare indicators is necessarily neutral with respect to the merits of such effects. Of course, others can interpret effects as benefits or costs relative to their own goals.

Efficiency Benefits

In general, we conclude that fruit and vegetable marketing orders:

- * Contribute to seasonal and interseasonal stability of producer prices and incomes - Stability is increased to the degree that provisions such as producer allotments, market allocation, and reserve pools are used to cut off the troughs and peaks in growers' returns. When growers are thus assured of more stable and dependable returns, a larger quantity is likely to be produced at any given expected

price. This benefits consumers in the same way as a reduction in the costs of production. But the magnitude of this effect is generally unknown (see Appendix A).

- * Promote quality assurance - Quality control provisions (minimum size, grade, and maturity standards) underlie this benefit. These minimum standards provide quality information for buyers, reduce "shrink" losses, and prevent "image deterioration."
- * Reduce trading costs - Pack and container requirements can reduce trading costs by standardizing trading units. Physical handling costs may also be less with standardized containers.
- * Increase the amount of yield-increasing and cost-reducing research and focus its applicability - This research, funded by order assessments on handlers, increases technical efficiency and productivity.
- * Increase the amount and availability of marketing information - This benefit is not related to specific provisions. Both quantity and quality of information are positively related to more efficient resource allocation.

Efficiency Costs

Efficiency-related costs of marketing orders are separated into two categories: Actual costs are those for which evidence is unequivocal; potential costs are those for which evidence is absent or conflicting, but which may be social costs under certain conditions.

Actual costs of fruit and vegetable marketing orders include the following:

- * Inefficient resource allocation - Two resource misallocation costs are apparent on the basis of the evidence available. Excess resources are being used in the production of California-Arizona navel oranges, valencia oranges, and lemons, and possibly, filberts and walnuts. Order-mandated allocation to secondary markets for these commodities is larger than would occur without orders. Deficient resources are being used in the production of hops and, possibly, spearmint oil. Limited entry and positive values for lease and sale of allotment represent the relevant evidence in this case.
- * Restricted firm growth - Application of seasonal volume controls may prevent handlers from fully exploiting growth potential. This may lead to an inefficient size distribution of handlers, depending on the nature of scale economies.
- * Reduced price competition - Seasonal volume controls as well as market flow provisions (shipping holidays and prorates) underlie this cost. Limited price competition causes restricted firm growth, and represents a pricing inefficiency cost itself.
- * A smaller range of choice with respect to quality - Without size, grade, and maturity standards, produce falling into lower quality categories would be available to consumers from time-to-time, if not continuously. Whether such quality

would be consistently purchased at prices reflecting profitable grower returns is not certain.

Potential but uncertain costs are as follows:

- * Diversion of wholesome food into nonfood uses - Since information on product disposition is mandatory, some marketing orders publicize pre-harvest abandonment and diversion of food to nonhuman outlets. However, such activities are not limited to marketing order commodities--culling, economic abandonment, and nonfood diversion occur for all agricultural commodities to some degree. But comparable "food waste" information is not made public for non-order crops. Such diversion is economically desirable when distribution costs exceed consumer value. We have no basis for judging whether orders increase or reduce the diversion of food to nonfood uses.
- * Restricted handling and packaging innovations - Some handlers and receivers apparently believe that cost-saving innovations in packaging design (for example, bulk shipments) are being impeded by container standardization. While this is plausible, variances for experimental packaging methods appear to be liberally granted. Consequently, we are unable to ascertain the validity of this potential cost.
- * Inefficient trade flows - Import quality standards imposed under section 8e of the Act limit imports to some degree. But to the extent minimum quality standards are economically efficient

as used for domestic production, similar gains apply to import standards for the same commodities. On net, we are not able to determine whether import standards represent significant barriers to free trade.

Effects on Income Distribution

Some marketing orders cause a redistribution of income among and between consumers, handlers, and producers. To the extent that quantity regulations or quality standards raise prices, producers reap short-run gains at consumers' expense. But the higher prices bring forth additional production which tends to drive prices back down to competitive levels. The only producers who gain in the long run are those with allotments, or with land, special skills, or other assets especially suited for producing the crop. These assets appreciate in value because of the increased demand or restricted supply.

When a marketing order that has effectively regulated quantity is terminated producers are likely to experience temporarily lower prices and reduced incomes until they have time to adjust production. Whether gains would accrue to consumers through a comparable short-run drop in retail prices is problematical, depending upon the flexibility of marketing margins. Owners of allotments and fixed resources especially suited for production of the crop would suffer losses in the value of their assets.

Handlers' income is tied to volume. Consequently, at least in the short run, orders result in handler losses in markets where volume is restricted, gains where volume is administratively increased.

Under price discrimination provisions, primary market consumers lose

while secondary market consumers gain. Quality standards involve transfers from consumers preferring lower-quality produce to consumers with a preference for high quality. Since we know little about the relative income levels of consumers within the affected categories, we are unable to determine the redistribution effects among persons of different income levels.

Entrepreneurial Independence

The mandatory nature of all order provisions necessarily limits the range of choices available to both growers and handlers. In the case of handlers, order regulations may be imposed against their majority will. With possible exceptions where marketing cooperatives are major handlers, the majority of producers under orders have voluntarily agreed to limit their independence. Of course, those producers who voted against the order have their decision-making freedom limited against their will.

Number and Size of Farms

Provisions that impose marketing quotas at either the producer or handler level--including producer allotments, market allocation provisions, and continuous prorates--tend to slow the exit of growers and handlers. This may serve to retard the decline of farm numbers, but at the same time, may prevent the achievement of economies to scale. Grade, size, and maturity standards may also help small growers compete with larger growers who would otherwise be better able to independently establish a favorable product image.

IMPACTS OF SELECTED POLICY OPTIONS

Policy options related to Federal marketing order programs include maintaining the current program and

eliminating marketing orders entirely. Options falling between those two extremes include changes in specific marketing order provisions and modification of administration and voting procedures. The use of other types of government programs to overcome the problems that marketing orders were intended to correct is also considered.

The option of maintaining marketing orders in their current form is examined first. Elimination of Federal marketing orders is treated next, assuming that no new government programs are adopted as replacements or partial substitutes for marketing orders. That treatment presents a rather pure "deregulation case" which serves as a basis for comparison. Then other types of government programs are examined which could address the problems that marketing orders are intended to overcome. Next, selected changes in marketing order provisions are analyzed, focusing on more complex modifications than simply continuing or eliminating the provision. The final portion of this section examines procedural options related to administration and operation of Federal marketing orders.

As noted previously, the analysis presented here is based on deductive logic, "real world" conditions, and empirical evidence relating to order effects. Greater reliance on empirical studies would be desirable, but little empirical research is available, and it is limited in scope. The great diversity of the individual commodity production and marketing systems and institutions complicates the analysis of policy options.

Maintain Current Marketing Order Program

The effects of the current marketing order system are described in the

preceding section. Since these effects would persist with continuation of the program, little needs to be added here. The description of the effects of the current program sets the stage for analyzing the implications of eliminating marketing orders, modifying order provisions, or modifying administration of the orders. Consequently, careful reading of the previous section, "Economic Effects of Marketing Orders," is necessary to properly interpret the likely effects of these changes.

To the extent that orders create efficiency gains and losses and distributional impacts, these would continue to be generated if the order program is retained. With continuation of the programs, entrepreneurial independence would continue to be constrained by the will of the majority of producers as reflected in elected administrative committee decisions. Administrative and compliance costs, aside from the cost of resource misallocation, would continue to be minor factors. Smaller producers would find it easier to remain in business to the extent that current programs assure them market access and provide income protection.

Eliminate Federal Marketing Orders

Total elimination of Federal marketing orders for fruits, vegetables, and specialty crops, without replacing them with new government programs having similar purposes, assumes that the enabling legislation is rescinded and that the associated administrative functions at the Federal level cease to exist. Governmental marketing programs and policies other than Federal marketing orders are assumed to remain intact. Chief among these are Federal laws governing cooperatives, grades and standards, and food safety, and State laws providing for State marketing orders. Anticipating the use of these

related tools of government policy is a key feature of the analysis.

Voluntary actions by individual entrepreneurs, cooperatives, and industry groups such as trade associations are a potentially important response to the elimination of marketing orders. Increased interest in forming State commissions to carry on some of the functions most subject to externalities and free-rider problems would be expected. Voluntary grades and standards might be more widely used, and additional information could be generated by USDA agencies with voluntary cooperation. Forward contracting to provide specified products to certain outlets might increase and additional private storage could contribute to intra- and even interseasonal stability.

To a large extent, the effects of removing marketing orders are the inverse of the order effects discussed previously. These will be briefly reviewed here; the reader seeking more detail should reexamine the preceding section on "Economic Effects of Marketing Orders." However, sudden termination of the orders could have disruptive short-term effects, depending on the timing of the decision and associated industry decision lead times. Many growers and handlers have made plans assuming the orders would continue in approximately their present form. Some would suffer losses in the values of their assets if the orders were terminated. The short-term effects of order termination deserve special attention.

Economic Efficiency

The impacts on economic efficiency from eliminating Federal marketing orders would be greatest for the orders that control quantity and less for those that only affect quality or provide

market support. The analysis will be segregated by these three general categories of marketing order provisions.

Quantity Controls - The greatest benefit of terminating Federal marketing orders would be reduced resource misallocation in the long run in some commodities which have mandatory quantity controls.^{21/} A likely loss would result from the increased cost of dealing with higher price and income risk. The returns to growers for their management and labor would probably be about the same in the long run after a period of adjustment. Impacts on product prices, land values, and consumers' welfare would depend upon the size of the gains from improved resource allocation compared to the losses due to increased instability.

Where price discrimination provisions in marketing orders have encouraged overinvestment and overproduction, short-term prices would fall below long-term efficient prices. The resulting disinvestment, including abandoned orchards and tree pulling, would lead to a more efficient industry in the long term. But there would be severe financial pressures on some producers during the transition. The ability to survive this period would depend as much upon the producer's balance sheet as upon his

^{21/} The long run refers, technically, to the amount of time required for producers to make complete adjustments to perceived permanent changes in the level and variability of expected returns. For perennial crops, requiring a large investment in specialized assets, the adjustments would require about 7-10 years. For annual crops, the adjustment period would be considerably shorter, probably 2-3 years.

or her efficiency. For example, a producer who entered the sector very recently with the aid of large amounts of borrowed capital might fail, even if he or she is more efficient than a long-term producer who has built up substantial equity that can be drawn upon during periods of diminished cash flow.

Currently, market allocations are made in such a way as to supply primary markets with quantities generally in line with historical trends. The secondary market is often regarded as residual, receiving very little product in periods of short production and receiving large quantities in periods of large crops. Thus, the secondary market absorbs a disproportionate share of production variability. Eliminating market discrimination would leave primary and secondary markets equally subject to quantity, and thereby price, shocks. The result would be greater instability in primary, generally fresh or domestic, markets and less instability in secondary, generally processed or export, markets. Incentives would thus be provided for forward contracting to assure market needs, private storage to take advantage of profit opportunities within or between production seasons, and possibly increased use of futures markets in a limited number of cases where markets are sizeable enough to support their development or where cross-commodity hedges are possible.

Turning to producer allotment provisions, the principal commodities for which allotments authorized by Federal marketing orders have been restrictive are hops and spearmint oil. Short-term adjustment problems would be created by their elimination. Current allotments have value representing capitalization of expected future program benefits. Removing allotments would result in loss of assets to producers, some of whom may

have entered production by purchasing allotments. Production would initially expand as previously blocked entry occurred. Less-efficient producers who previously held allotments would ultimately be replaced by more-efficient new entrants.

Stability over the long term would be expected to decrease with the elimination of producer allotments. Producers currently target their production goals to their allotted marketable quantities. Without allotments, each producer would have an increased tendency--and even necessity--to attempt to out-guess fellow producers on appropriate production levels. Such decentralized decision-making for a perennial crop often contributes to boom and bust cycles of varying length and amplitude.

The third category of quantity controls consists of mandatory storage provisions intended to smooth quantity and price fluctuations over time. These provisions may be directed at intraseasonal fluctuations through market flow regulations, including prorates and shipping holidays, or interseasonal fluctuations through reserve pools. As discussed earlier, these provisions may be employed in a manner to effectuate price discrimination. Here we deal with the case of merely shifting marketings from one period to another, either within season or between seasons, while leaving total marketings unchanged. In particular, we are assuming that if production is restricted by order provisions from entering the primary market in one period, the product will enter the primary market upon leaving storage.

Elimination of those provisions enabling storage would have mixed effects on efficiency. To the degree these provisions are used to discrimi-

nate among markets, their elimination would enhance efficiency. To the degree the provisions are used to provide for needed buffer stocks that would not otherwise be created, their elimination would cause inefficiencies, especially in the short term. In the long run, quantity controls which efficiently shift marketings and consumption from one period to another would be expected to be replaced by private storage upon individual, profit-motivated initiative. However, the pace at which private storage would develop might be slow, due in part to the high risks involved. Even though physical facilities obviously exist to handle order-mandated storage, incentives without the order are unknown. The period of adjustment after termination of controls, possibly several years in length, would probably contain prominent examples of unexploited opportunities for efficient storage within and between seasons. These comments apply to "on-tree" storage of citrus as well as to storage of harvested commodities.

The magnitude of the short-term adjustment problem would depend heavily upon the magnitude of any accumulated stocks resulting from the storage program. If stocks were near "normal" levels expected in a market without reserve pools the adjustment problems would not be severe. The rigidity of short-term supply would dampen the rate of price decline. If stocks were well above "normal" levels, the short-term adjustment problems would be much more severe. The inelasticity of short-term demand implies that a major drop in price would be required to clear the market if existing large stocks were added to a given year's marketable supplies. The ability to weather such a short-term financial crisis would, again, depend upon the producer's balance sheet more than efficiency. Incentives to use cross-commodity

hedging in futures markets or even to develop futures markets in a few instances would exist due to price fluctuations.

The ability of any private group or existing government program, other than Federal marketing orders, to establish quantity controls such as market allocation or producer allotments, is limited. Certain types of joint action would violate antitrust law. Greater use of State marketing orders could moderate the impacts noted above for commodities produced within a single State. However, many commodities that would be affected by the elimination of quantity controls are produced in more than one State. Attempts by producers in one State to regulate quantities and prices would normally be counteracted by the actions of producers in other States. Efforts by cooperatives or private voluntary organizations to continue quantity controls would likely have little moderating effect. Those not cooperating, the "free-riders," would enjoy all the benefits while their individual actions would subvert the collective goals of the participating members.

Quality Controls - In the absence of any compensating action, the elimination of the quality control provisions of Federal marketing orders would have several effects on efficiency and productivity. Some resources previously devoted to inspection and information dissemination by producers and handlers would be freed for other uses. But voluntary inspection and grading would replace mandatory inspection to some degree. Individual handlers would still have an incentive, as they do under orders, to compete on the basis of assuring buyers uniformly high quality. However, the range of product quality and price available to consumers would likely increase, as would uncertainty

about quality. Shipments of low quality produce early and late in the season would be especially important in widening the perceived quality spectrum. The resulting product image in consumers' minds would thus be more diffuse. The effect of low quality shipments on market demand for the remainder of the season is difficult to assess. To the extent that product image problems reduced overall demand, inefficiencies could arise with too few resources devoted to producing the commodity. Lack of minimum standards might also result in more economic loss due to spoilage, but empirical evidence relating to possible losses is not available.

Certain institutions exist which could substitute for the quality control provided by Federal marketing orders. Producers of a number of commodities not under Federal orders do establish, either under State marketing orders or separate State legislation, a minimum quality for interstate shipments--for example, Washington apples. Where they do not already exist, State marketing orders would probably be developed in some instances; this could lead to increased use of a State name in building an image for the product. Large cooperatives and private firms would be expected to increase their efforts to differentiate their brands as being of consistently high quality--for example, Sunkist oranges and Blue Diamond almonds. Similarly, trade associations might increase efforts directed toward quality control and promotion of their members' production.

An important question is whether diversity in quality would result in major efforts towards product differentiation. The greater range of consumer choice inherent in the diversity is an argument in favor of the elimination of Federal marketing orders. But increased

use of resources in brand advertising and nonprice competition is a cost to society.

Market Support Provisions - The primary activities in this category that would be eliminated if Federal marketing orders were discontinued are standardization of containers and packs, research, and promotion and advertising.

The impacts of eliminating mandatory standardization of containers and packs would parallel those discussed under quality controls. Private firms, voluntary groups, and State orders would play a greater role in stipulating packaging standards, with resulting diversity probably greater than now exists. New ideas for packaging could be introduced without going through marketing order administrative procedures. Handlers would have more options, but marketing agents would need to be more vigilant with regard to subtle, and sometimes deliberately misleading, differences among package size and content. In other words, a wider array of packages would bring greater uncertainty as well as greater options, and the uncertainty could be lessened only by using more resources in obtaining information. In a few instances, pack and container standards apply to consumer packs, and similar arguments about diversity and uncertainty apply. The net effect on overall efficiency is impossible to judge, given a general lack of empirical evidence dealing with the topic.

The long-term productivity and efficiency of the industry would likely be harmed by the elimination of marketing order provisions which allow assessments for research. The particular needs of each commodity group will generally not be as well recognized in general research programs as in the programs now funded by marketing orders. As noted earlier, research is a classic

case of an activity with externalities. As such, efforts by individual firms or voluntary organizations to support research are plagued by the "free rider" problem and would almost never be successful on a sustained basis for commodities where brand identification or other means of identifying and capturing differences are difficult.

The impacts of generic promotion on efficiency are varied, depending upon the nature of the promotion. Promotional activity which tells consumers that a large crop was harvested so prices are low, or conveys nutritional information, benefits society so long as the gains from more informed decisions exceed the resources consumed by the promotion. Brand advertising aimed at differentiating a product by creating brand loyalty or generic advertising aimed at increasing the desirability of a product through systematic association with some desired trait (beauty, popularity, vigor, etc.) is much less likely to be beneficial from a general societal viewpoint.

The elimination of Federal marketing orders, and thus the promotion and advertising financed under their auspices, would be expected to lead to greater promotional efforts by private firms, cooperatives, trade associations, and State marketing orders and commissions. Since each of these operates from a smaller industry base than a Federal marketing order, and since the providing of informational material on a generic product is most subject to externalities and free rider problems, informational advertising would be expected to decrease most among types of advertising. The net effects on overall efficiency of these changes appear small and indeterminant.

Distributional Issues

The principal shifts in economic welfare with the elimination of Federal marketing orders would arise from the ending of quantity controls. The impacts differ between the short and long terms. Some analysis is also presented on possible means of moderating short-term effects through compensation policies or through the gradual phasing out of order provisions.

There is an important class of impacts which vary with size of firm. These distributional impacts are discussed later under "Number and Size of Firms."

Eliminating producer allotment provisions would initially cause allotment values to fall to zero, resulting in income losses to holders of allotments. Entry and expansion would initially be induced, causing prices to fall to levels consistent with normal rates of return to inputs. The long-run levels of price and output would depend on how order elimination affected price risk, and producer supply response to risk.

The elimination of price discrimination provisions would set off a chain reaction of interrelated distributional effects. In the short run, prices to growers would decline, and growers would find themselves getting lower returns on assets which are fixed in the industry in the short run, such as land in orchards, trees, specialized equipment, and specialized management skills. There is little that producers could do in the short term to moderate this. In many cases, the producers who would suffer losses are not the individuals who gained most from price discrimination. Those who gained most were in the industry at the time price discrimination was initiated. Subsequently, the

above-normal rates of return to assets in the industry were gradually eroded by production increases and price declines, until new entrants and expanding producers were once again receiving rates of return consistent with a free-market environment.

Consumers in the primary market would gain substantially as a group, in the short term. They would be consuming larger quantities at lower prices. Since the foods affected are a very minor part of consumer budgets, and since farm prices are small relative to retail, the impact on each individual consumer would be small.

Consumers as a group in the secondary market would be hurt in the short term, consuming less at higher prices. Again, the impact on an individual consumer would be small.

In the long run, producers would be able to disinvest--for example, shift land into other crops--with the termination of restrictive price discrimination controls. As a result of disinvestment, production would fall and prices would rise, reaching a level consistent with normal rates of return to inputs. Whether the ultimate level would fall short of or exceed producer prices with price discrimination depends on response to risk. Incomes of producers in these more distant years, ignoring accumulated losses over the short term, would be similar to their current incomes since their resources would be yielding normal rates of return at the margin. Total revenues to the industry, however, would likely have declined.

Consumers in the primary market would continue to benefit in the long term, although less than in the short run. The moderation reflects a rise in price and decline in consumption as producers gradually cut back production.

The final long-term result would again depend on producers' tradeoffs in their production response to price expectations and price risk.

The long-term status of consumers in the secondary market will worsen relative to the short-term. Prices will rise to a higher level and consumption will be further cut.

There are two general options to cushion short-term distributional impacts while moving to the long-term free market solution. First, losers, i.e., consumers in secondary markets and producers, could be directly compensated through governmental income transfers. This alternative would require new legislation, result in a large administrative burden, and increase governmental expenditures. Second, a time schedule for gradually moving from the restrictive price discrimination case to the free market case could be formulated. The time schedule would specify a minimum rate of progress toward a competitive market by setting forth minimum or maximum values for a key variable, or variables, over a several-year period, e.g., the minimum percentage of the crop to be allocated to the primary market, the maximum number of weeks prorates could be used in a season, the maximum quantity which could be diverted into the secondary market by legal mandate, or the maximum differential between primary and secondary market prices. If properly formulated and executed, a gradual adjustment policy could lessen short-term losses, as well as lessen short-term gains, while largely preserving the incentives for producers to alter production patterns.

Smoothing the transition from a restrictive producer allotment program to unrestricted marketings would basically involve increasing allotments.

The increases could be designated for new entrants, or for production expansion by existing producers. A number of details may vary according to the commodity involved.

Entrepreneurial Independence

Individual entrepreneurial flexibility would be enhanced by eliminating Federal marketing orders. Producers and handlers would be free to expand their businesses as they see fit, and to market what, where, and when they choose. The market would constrain what each would find possible and profitable.

Number and Size of Firms

Based on the evidence and arguments cited previously, the elimination of the quantity control provisions would be associated with a shift toward fewer producers and handlers, all other things being equal. Removing producer market allotments may increase numbers of growers in the short run, but in the long run the same shift to fewer producers would be expected. The simultaneous elimination of quality control and market support provisions would probably reinforce this tendency toward fewer and larger firms.^{22/} The loss of information generated by marketing orders would be particularly likely to exacerbate any shift towards fewer, larger firms.

In summary, the impacts of completely eliminating marketing orders

^{22/} Helmberger, Peter G., Gerald R. Campbell and William D. Dobson, "Organization and Performance of Agricultural Markets," in Lee R. Martin, ed., A Survey of Agricultural Economics Literature, Vol. 3, Minneapolis, University of Minnesota Press, 1981, pp. 581-582.

would vary greatly from commodity to commodity, but include the following:

Efficiency

- * Gains would result from reduced misallocation of resources, lessened restrictions on firm growth, increased competition among handlers, and increased range of choice for consumers.
- * Losses would result from greater instability in farm prices, production, and shipments, reduced market information, and less research.
- * Evidence is such that the overall effect is indeterminate.

Distribution

- * Losses in value for land and other assets relatively specialized for production of certain crops, a temporary drop in prices and incomes for growers, and higher prices and less price instability for consumers in secondary markets would occur.
- * Lower prices and greater price instability for consumers in primary markets would result.

Entrepreneurial Independence

- * Flexibility in individual decision-making would be increased.

Size and Number of Firms

- * Restrictions on firm growth would be eased; fewer and

larger farms and handlers would likely result.

Program Alternatives to Marketing Orders

The problems which are addressed by Federal marketing orders could be dealt with partially, or in total, by other types of programs. The alternatives will, in general, have somewhat different costs and consequences than Federal marketing orders. In this section, we examine selected alternatives, comparing them to elimination of Federal marketing orders and to continuing the orders in either current or modified form. The alternatives considered here would generally require legislative action.

The program alternatives are organized according to the problems they attempt to overcome. These are: (1) income instability caused by price and production variability, (2) imbalances of market power, (3) information failures, and (4) inability of individual growers to capture benefits of research and promotion efforts.

Programs to Provide Income Stability

Several government actions are possible to provide income protection. The two most commonly used in the United States are government procurement and government price support and storage programs.^{23/}

^{23/} Government crop insurance is also used to provide income protection, but only for low yields and crop losses, which result in farmers having little or nothing to sell at very high prices. Marketing order quantity controls and the alternative programs discussed here are designed to protect incomes when

The Federal Government is a major purchaser of some agricultural commodities, such as food for defense personnel, and subsidizes food purchases through programs such as school lunch and Food Stamps. More attention to planning these purchases, by systematically increasing purchases of commodities with depressed prices, could increase stability to a limited degree.

The various types of government programs used to stabilize and support prices and producer incomes for food grains, feed grains, and cotton might be adapted to fruits and vegetables. The possibilities include price supports combined with government and farmer-held reserves or surplus disposal programs, target prices coupled with direct payments, and acreage allotments. These programs have been applied in various forms and with mixed success to the major commodities since the 1930's. Except for a government price support and storage program for potatoes in the 1950's that was terminated due to the problems of disposing of burdensome surpluses, this approach has not been used for fruits and vegetables.

In a price support program, the government stands ready to buy a commodity whenever the market price falls below the support price. The government either stores the commodity or subsidizes farmer storage. The commodity may be sold back on the market later when the market price exceeds the release price. Alternatively, the government may dispose of surplus quantities through sales on a secondary market at a price below the primary market price.

yields are high and crops bountiful--when farmers have much to sell at very low prices.

Several economic considerations have helped preclude the use of government price support and storage programs for fruits, vegetables, and specialty crops. First, these crops are not generally considered to be as critical to the national food supply as crops such as wheat and corn. Consequently, providing food security does not enter as a major argument for supporting prices and assuring stocks of these commodities.

Second, fruits and vegetables do not generally lend themselves to storage like the grains. Many can be stored for only short periods in fresh form and even canned and frozen products deteriorate with age beyond a certain point. Nuts are storable for limited periods and commodities such as tart cherries and cranberries are stored under marketing orders, although storage costs are high compared to those for grains.

Third, determining appropriate support levels for each of the many different fruits and vegetables would be difficult. Parity is not a suitable standard because it fails to adequately take into account changes in technology and production costs for individual crops. For the major crops, a cost of production standard has been used, though it too has many limitations. Estimating and continually updating production costs for the many different fruits and vegetables would be costly.

Finally, the price support and storage programs already in existence for the major farm commodities have defects that would likely carry over to fruits and vegetables. These programs are relatively costly to administer compared to marketing orders. They frequently lead to surplus accumulation. And they draw upon tax revenues to subsidize storage and disposal activities.

Programs to Overcome Imbalances in Market Power

Programs to alter the balance of market power by providing producers opportunities to act in unison in selling their commodity include:

- * Support of cooperatives.
- * Farmer bargaining.
- * Marketing boards.

Government might provide more support, such as fieldmen, educational materials, and programs of research, to fruit and vegetable marketing cooperatives. This would help growers achieve some of the benefits of group action, such as standardization of product, assurance of quality, and coordination of flow-to-market, without the mandatory aspect of marketing orders. This approach would not eliminate the "free-rider" problem which first prompted the use of marketing orders. It could lead to problems in equitable treatment of competing cooperatives and cooperative versus independent producers.

Another approach to raising farm prices is to give farmers' organizations bargaining powers akin to those available to workers through labor unions. With this option fruit and vegetable growers would be able to directly affect price. Considerable bargaining already exists between grower organizations and fruit and vegetable processors. But only Michigan has a law providing for exclusive agency bargaining.^{24/} With

^{24/} For a more detailed treatment, see James D. Shaffer and Randall E. Torgerson, "Exclusive Agency Bargaining," Leaflet No. 7-6 in the series

exclusive agency bargaining, a duly elected growers' organization can bargain with buyers for contracts which are binding on all growers of the commodity, regardless of whether they are members of the bargaining organization. This eliminates the "free-rider" problem and makes it impossible for nonmembers to undermine the negotiations by offering to sell at a lower price.

Bargaining involves confrontation, rather than cooperation, in dealing with problems associated with imbalance of market power. It is most likely to succeed where the number of buyers is small, buyers are price setters, and quantity and quality can be specified ahead of delivery. These conditions are only partly met in the fresh fruit and vegetable industry. Bargaining in fruit and vegetable crops is presently limited to commodities for processing.

Several efforts have been made in the past to enact stronger farmer bargaining legislation. The most recent proposals would require good faith bargaining, but would not provide for exclusive agency bargaining. In addition to Michigan, the States of California, Maine, Wisconsin, and Minnesota have agricultural bargaining legislation.^{25/}

Marketing Alternatives for Agriculture, Cooperative Extension, New York State College of Agriculture and Life Sciences, Cornell Univ., Ithaca, New York, 1976.

^{25/} Bunje, Ralph B., Cooperative Farm Bargaining and Price Negotiations, USDA, ESCS Cooperative Information Report No. 26, July 1980.

Marketing boards are used extensively for marketing agricultural products in Canada, Australia, New Zealand, and other countries.^{26/} A marketing board is similar to a marketing order; it is guided by farmer representatives and, once established, participation is mandatory by all growers and handlers. Marketing boards serve essentially the same functions as marketing orders, except that they typically exert even greater control. Some operate marketing facilities and/or act as the sole buyer and seller for the commodities covered. Marketing boards would be subject to the same types of criticisms as marketing orders.

Marketing boards would require specific legislative authorization for each commodity. This approach has not been used in this country. While some States have legislatively authorized marketing commissions that provide for grade and size standards to be established, fund advertising, etc., these commissions have not generally been authorized to provide for quantity control activities.

Programs to Increase Information Available to Decision-Makers

One of the generally desirable byproducts of marketing orders is the assembly and publication of market information. The data needed to administer the orders frequently have other uses in the industry. In the

^{26/} For a more detailed treatment, see Martin E. Abel and Michele M. Veeman, "Marketing Boards," Leaflet No. 7-10 in the series Marketing Alternatives for Agriculture, op. cit., and Sidney Hoos (ed.), Agricultural Marketing Boards--An International Perspective, Ballinger Publ. Co., 1979.

absence of marketing orders, such information could be collected and published by the Federal-State market news program, given the availability of public funding.

In order to obtain information comparable to that now available through marketing orders, mandatory reporting would likely be required.^{27/} Mandatory reporting would be resisted, collection costs would probably be substantial, and the data obtained might be unreliable. Collection costs could possibly be reduced through a well designed sampling approach, but a rather large sample would be required due to complexities of the fruit and vegetable marketing system.

Forward contracts are presently used for some commodities subject to Federal marketing orders. A forward contract is an agreement between a seller and a buyer relating to the delivery and acceptance of a specified product in some future time period. The use of forward contracts can facilitate stability and efficiency by reducing uncertainty and thereby providing a more solid basis for investment decisions.

A preferred solution from the viewpoint of society as a whole would be to encourage the use of standardized contracts which are traded in an open market.^{28/} This would preserve the

advantages of contracts in terms of providing an improved basis for decisions on the part of both sellers and buyers. The open market feature would insure that price and quantity information is available to all market participants and also to any other interested persons, reducing any imbalance of information between producers and buyers.

The Federal Government could facilitate the formation of forward contract markets in several ways. Support could be given to the development of standard contracts, based primarily on current practice in the industry. Financial support could be given to the central clearinghouse operations utilizing face-to-face contact, telephone hook-ups, computerized systems, or some combination. Governmental guarantees of compensation for damages due to fraud, misrepresentation, or default might be a critical contribution, especially at the outset when participants would be wary of risking their business to a new institution. Many other support possibilities exist.

The problem of "image deterioration," which minimum quality standards address, is both an information failure and an externality. The information failure aspect relates to the inability of buyers and, ultimately, consumers, to assess quality without damaging or destroying the product--for example, the beautiful but sour grape. The externality aspect relates to some producers marketing poor quality for individual

^{27/} For a more detailed treatment, see Kirby Moulton and Daniel I. Padberg, "Mandatory Public Reporting of Market Information," Leaflet No. 7-5 in the series Marketing Alternatives for Agriculture, op. cit.

^{28/} For a more detailed treatment, see Thomas L. Sporleder and David L. Holder, "Vertical Coordination Through Forward

Contracting" and David L. Holder and Thomas L. Sporleder, "Forward Deliverable Contract Markets," Leaflets No. 7-3 and 7-4, respectively, in the series Marketing Alternatives for Agriculture, op. cit.

gain when that action leads to diminished demand and losses for the industry as a whole.

Grading without the imposition of minimum standards is one way of dealing with the information failure aspect of the "image" problem. For most fruits and vegetables buyers can specify minimum acceptable grades, thereby avoiding produce they do not want. But the "image" problem is only partly addressed by voluntary grading. So long as consumers are unable to detect quality differences at time of purchase, they will be tempted to buy ungraded produce at a lower cost. Resulting disappointments about quality may reduce overall demand for the product. Making grading mandatory would partly overcome this problem, particularly if grade labeling at the retail level were required.

A key to the effectiveness of mandatory grading would be the ability of established grades to accurately reflect maturity and other quality attributes. Special legislation, either at the State or Federal level, would be required in the case of most commodities presently under marketing orders.

Independent Research and Promotion Programs

In addition to the research and promotion activities authorized under marketing orders, there now exists separate Federal legislation authorizing research and promotion programs for cotton, wool and mohair, eggs, beef, potatoes, and wheat. In the absence of marketing orders similar legislation might be passed for individual fruits, vegetables, and specialty crops. Or blanket authority for research and promotion checkoff programs could be provided for all such crops.

The merits of generic promotion of agricultural products remain controversial. Since total human food consumption is limited, any success in promoting one product tends to reduce sales of other products. Total food expenditures may rise or fall, depending upon the relative values of the products shifting in and out of consumption. When many different products are promoted at the same time, the effects may be mutually offsetting. In contrast, promotion based on factual information about nutrition may improve consumers' food buying decisions, making both consumers and growers better off.

The controversy surrounding generic food advertising cannot be resolved here. But if generic advertising is desired, it can be facilitated by programs other than marketing orders. Compulsory programs such as State commissions that are not subject to exploitation by free riders appear to have little advantage or disadvantage compared to the marketing order approach. Voluntary generic promotion programs undertaken by cooperatives would suffer from free-riders.

Summary

This brief review of some feasible government program alternatives to marketing orders identifies several other methods for dealing with perceived problems of the free market system. These other methods call for various degrees of direct or indirect government involvement, sometimes more stringent than under current Federal marketing orders. Some overcome certain concerns about marketing orders, while others may create more serious concerns.

Selected Changes in Marketing Order Provisions

In addition to the options of

continuing marketing orders unchanged and eliminating them or some of their provisions, certain modifications could be made to alter their impacts. The implications of such modifications for productivity and efficiency, distribution, entrepreneurial independence, and numbers and size of firms will be discussed below.

Changes in Quantity Provisions

By setting limits on the quantity regulations available through marketing orders, some of their objectionable effects on resource allocation might be reduced while retaining part of the stabilization benefits. The basic idea would be to allow use of quantity regulations only as "safety-valves" to protect growers from the disastrous prices associated with extraordinarily large crops. These possibilities are examined below for each of the major types of marketing order provisions.

Producer Marketing Allotments - Some of the producer allotment orders have provisions for regularly increasing allotments. This could be made mandatory for all allotment programs. A suggested criterion would be to increase allotments at a rate that keeps their average value over a period of years near zero. In principle, the allotments should be constraining in those years when there is unwarranted optimism among growers about price prospects and non-constraining at other times. Unfortunately, neither the order administrative committees nor USDA knows with much precision which years are which. A possible approach would be to increase allotments each year by a percentage or fixed number of acres designed to bring the value of the allotments to zero after several years. The rate of increase in allotments could be recalculated

each year based on the previous year's experience.

Allocating yearly increases in allotments to growers poses a problem. Allocation to existing growers in proportion to allotment bases prevents new entrants. Allocation by lottery deserves consideration, but introduces an element of gaming and uncertainty which may be inefficient. Allocation to the highest bidder would avoid such uncertainty. The prices should be relatively low if allotments are increased as suggested above, so the cost of allotments would constitute only a small barrier to the flow of new resources into production. This method has the advantage of determining an explicit price for the allotments which can be used in determining how many new allotments to make available in subsequent years.

Market Allocation Provisions - As with marketing allotments, it should be possible to constrain the use of market allocation provisions in such a way as to limit distortions in resource use, but retain some stabilization benefits. The possibilities include:

- * Establish minimum percentage allocations to the primary market.
- * Regulate only when price falls below a "trigger" level.
- * Limit the price difference between equivalent qualities on the primary and secondary markets.

A possible guideline would be to require percentages allocated to the primary market to grow at some prescribed rate. This guideline could be adjusted for shifts in demand. In particular, for commodities such as

almonds where exports are important, foreign demand and supply as well as domestic utilization would need to be taken into account.

Alternatively, a price trigger might be established allowing regulations to be implemented only if the projected price for growers were below some critical level. Either the price trigger or quantity guideline approach would require continuing economic analysis to set trigger levels or guidelines.

Prorates - Among the modifications in prorate provisions that could be implemented are the following:

- * Set minimums on the total quantity prorated over the season for shipment to the primary market.
- * Facilitate the transfer of prorates.
- * Allow only partial-season prorates.

The idea behind setting minimums on total quantities prorated would be to prevent use of prorates as a device for allocating between markets and allow their use solely for allocation over the season. The minimums would be set based upon production and historical utilization. Minimums could be increased each year as described above for market allocation programs.

Making prorates negotiable would be one way of encouraging their transfer. While some flexibility currently exists in the form of borrowing ahead on prorates or using a left-over prorate from the previous week, restrictions of those activities to one week on either side of the subject week limit flexibility. Fully negotiable prorates would

make it possible for handlers with access to superior quality crops in a given year to pay sufficient compensation to handlers with an inferior quality crop so that both would be better off. The marketing system would operate more efficiently. More efficient operators could expand, but possibly at the expense of reducing numbers of participants in the industry.

Partial-season prorates could be used to spread sales over the season but would be less restrictive on total sales. This should increase efficiency for commodities for which prorates are applied continuously or over most of the season. The less restrictive nature of such prorates for certain commodities would increase individual entrepreneurial independence. However, the impact on efficiency would be dependent upon how the resulting shipments hit the market.

Shipping Holidays - Possible constraints on shipping holidays include:

- * Further limit the number of times shipping holidays can be used over the season.
- * Limit the length of shipping holidays.

Since the effects of shipping holidays on the efficiency of product movements to market are uncertain, the implications of such constraints cannot easily be assessed.

Reserve Pools - Among the possible modifications of reserve pool programs are the following:

- * Limit reserve pool quantities to amounts determined to be economically efficient to store.

- * Require reserve quantities to be returned to the primary market before significant loss or decay occurs.

Efficient levels of carryover might be determined by using economic models which take into account future yield probabilities, demand, and storage costs (see Appendix A). Such models help determine storage levels that are efficient over the long run. But whether such models would improve storage decisions over those made by private entrepreneurs remains uncertain.

Requiring that any quantities placed in reserve pool status be returned to primary market channels, either within the same season or in following seasons before significant storage loss or decay occurs, would reduce potential resource misallocation and inefficiency created by reserve pool operation and provide greater incentive for reserve pools to be established carefully.^{29/}

Other Changes - Additional modifications under quantity control provisions might deal with concerns about the effects of marketing order quantity control provisions, as well as some quality control provisions, on low income consumers:

- * Prohibit nonfood use of quantities diverted from primary markets by marketing order regulations.
- * Require that quantities not marketed on primary markets be

made available to charitable organizations.

Prohibiting nonfood use of quantities diverted from primary market outlets would apply to market allocation programs, prorates, reserve pools, and to grade and size quality control programs. However, the result may be less efficiency than would occur with no marketing order, since fruits and vegetables are commonly disposed of in nonfood outlets when those are the highest return or least-cost choice. This is due to quality variation and variation in production relative to demand causing periodic gluts of perishable foods in the marketing system. Such prohibition would restrict entrepreneurial independence.

Requiring that amounts not marketed in primary markets be made available to charitable organizations for distribution would not mitigate the resource misallocation that may occur because of restrictive prorates or allotments in the short run. But it would eliminate the concerns about food waste as a symptom of resource misallocation. And it would effect a redistribution of income from producers to low-income consumers, or at least facilitate such redistribution.

Though most orders now allow charitable donations, charitable organizations are not permitted to charge recipients to cover the cost of moving the commodity from the location obtained to final destination and distributing it. This has tended to limit donations, since many organizations are financially incapable of incurring such costs. If recipient charges were permitted in order to increase donations, strict criteria on charges would be necessary to distinguish donations from sales.

^{29/} If the gains from stability are large, occasional diversion of reserve quantities to secondary uses or disposal may be economically justified. See Appendix A.

Possible Changes in Quality Provisions

Certain changes in the types of grade and size regulations allowed under marketing orders may reduce possibilities for resource misallocation while maintaining the benefits in terms of product image. Among these changes are:

- * Limit year-to-year changes in standards.
- * Allow mandatory grading and labeling, but not minimum standards.
- * Eliminate application of standards to imported commodities under section 8e of the Act.

Marketing orders now allow establishment of minimum grade, size or maturity standards for shipment to fresh markets. The minimums are usually established with reference to voluntary U.S. grade standards and are enforced through mandatory inspection. Limiting the year-to-year changes in minimum standards established under the orders would help assure that the minimums were truly designed to maintain a minimum acceptable quality image for the commodity. This could lessen efficiency losses from using grade standards to limit the quantities marketed. It would increase efficiency by allowing producers to establish production practices designed to meet the preset minimum grade or size standard.

Mandatory grading and grade and size labeling without minimum grade and size standards was discussed under alternative government programs. Mandatory grading also could be incorporated into the existing marketing order programs. As noted earlier, mandatory grading would provide buyers needed information about quality without denying them the

opportunity to purchase smaller or lower quality products.

Section 8e provisions, which require imports of thirteen commodities regulated under marketing orders to meet minimum standards for grade, size, and maturity established for the domestic market, are sometimes alleged to discriminate against foreign producers who produce qualities different than produced in the United States. While section 8e provisions represent a form of non-tariff barrier; whether they are unduly restrictive is a very complex question. The potential modifications of grade, size, and maturity standards discussed above would have the effect of mitigating the impact of section 8e regulations as binding non-tariff barriers without requiring amendment of the Agricultural Marketing Agreement Act.

Finally, modifying grade, size, and maturity standards may address the concern of consumer groups that marketing orders restrict food choices for low-income people. Particularly, some argue that marketing order minimums may be based only on appearance, and the restricted commodity is perfectly wholesome. Generally, trade within the fruit and vegetable industry still relies primarily on observable physical characteristics. Modification of grade standards is a largely separate issue from establishing minimum grade and size standards for shipment to market.

Changes in Market Support Provisions

Many orders define container size and volume standards and often specify or limit the pack within the container. This standardization aids communication in the marketing system and presumably increases marketing efficiency. However, innovation leading to greater productivity and efficiency could be

hindered if order administrative committees do not provide for exceptions so that experimental containers can be tested.

Another possible modification deals with the funding of advertising and promotion expenditures through marketing order assessments. Given the generally debatable benefits and sometimes controversial nature of such expenditures, permitting rebates, or even non-payment, of assessments for advertising and promotion may be desirable. A number of State commissions and separately legislated Federal research and promotion programs now use such a system. This would increase individual entrepreneurial independence and redistribute income to those who choose not to participate. However, such rebate programs would permit free riders. The prevention of free riders is a major reason for conducting programs under marketing orders rather than under voluntary trade groups or cooperatives.

Modification of Administration and Voting Procedures

Some concerns about marketing orders may be dealt with by modifying administrative and voting procedures. The effect of such modifications on efficiency are largely indeterminate. They deal mainly with the distribution of benefits and costs under the programs or entrepreneurial independence issues.

Voting Procedures - Among the possible changes in voting procedures are:

- * Require any vote on amending an order to also be a vote on continuing the order.
- * Require periodic referenda for continuing an order.

- * Change the proportions of favorable or unfavorable votes required to establish an order.
- * Eliminate bloc voting by cooperatives.
- * Require full industry votes on more regulatory issues.

Current procedures for voting on fruit and vegetable marketing orders allow marketing order amendments on most issues to be voted on without affecting the existence of the order. An alternative would require voting for continuation of the order as amended. This would allow industry members more frequent opportunity to express their opinion on the need for the order, and would strengthen the authority of the Secretary of Agriculture in forcing amendments to orders. Conversely, it could discourage industry from proposing amendments to modernize orders due to the possibility of losing the orders.

Termination of an order requires a specific act on the part of industry opponents of the order. An alternative approach would be to require periodic referenda on order continuation. The administrative workload could be evened out by subjecting some of the orders to vote each year. Such periodic referenda would require industry members to reevaluate an order on a regular basis. Order programs might become more responsive to changes in growers' needs and preferences, but government administrative costs would increase.

To establish an order, a two-thirds positive vote by number, or two-thirds positive vote by volume voted in the

referendum, is required.^{30/} This procedure could allow an order to be put into effect by a numerical minority of the larger members of the industry. In contrast, an order must be terminated if more than 50 percent of the affected producers, having at least 50 percent of the total volume, favor termination. A compatible alternative for initiation would be to require approval of two-thirds by number and two-thirds by volume. This would insure broader acceptance of an order.

In marketing order referenda, cooperatives are permitted to vote their membership in a bloc--that is, to cast one vote representing all of their producers and volume. This strengthens the weight of cooperatives in the vote and could permit orders or amendments to be approved or defeated by a minority of the industry, if a large segment of the cooperative membership disagrees with the cooperative leadership. Cooperative representatives argue that the leadership of a cooperative would be foolish to vote in a manner not favored by a strong majority of their members. Elimination of bloc voting would provide each cooperative member of the industry an opportunity to evaluate the potential effects of the marketing order provision and vote accordingly. This would increase individual entrepreneurial independence and make the voting outcome less dependent on existing industry structure.

Finally, current order procedures allow the marketing order administrative committee to adopt recommendations that are then implemented under order of the Secretary of Agriculture. By requiring a full industry vote as opposed to a

marketing order administrative committee vote on major recommendations, broader participation and greater individual entrepreneurial independence would be provided. Such an approach would increase the cost and time required for decision-making, perhaps unworkably for perishable commodities. Since administrative committee members are elected, the increased opportunity for individual expression would be nominally improved but at a substantial loss in administrative efficiency.

Administrative Committee - Changes in the composition and tenure of the administrative committee could change the character of marketing order programs somewhat. Possible changes include:

- * Limit tenure of committee members.
- * Require greater non-industry representation.

Establishing a limit on tenure for committee membership may encourage more rapid adjustment of committee composition to changes in production and handling practices. It would assure an opportunity for different ideas to be brought into the marketing order administration and reduce any tendency to institutionalize individual philosophies of industry purpose and operations. The result could be greater industry efficiency, if new and better ideas were generated through this procedure. But the reduced continuity could have the opposite effect.

Current policy of the Agricultural Marketing Service is to encourage, but not require, marketing order administrative committees to add one public voting member if an order is amended. This policy has discouraged industries operating under some orders from seeking

^{30/} For California citrus fruits, a three-fourths positive vote is required.

amendments and others from adopting proposed amendments. The Secretary of Agriculture is charged with the responsibility for taking actions under marketing orders that are consistent with the public interest. Marketing order administrative committees are advisory to the Secretary. Expanded non-industry voting representation on marketing order administrative committees might be appropriate. The advantage would be that the administrative committees would have direct input from more persons with differing viewpoints in developing initial recommendations for the Secretary's approval and implementation.

The disadvantage of this requirement is widespread industry opposition to allowing non-industry people a voting voice on matters directly affecting their businesses. The feeling is strong enough that a number of marketing orders would likely discontinue operation if required to have a significant number of public or non-industry members on the committees, especially if industry members would not have a clear majority vote. Incompatible interests of committee members would perhaps complicate order administration. There also may be problems in finding knowledgeable public members and providing financial support for their participation.

USDA Administration - Additional changes that could be made in administering marketing orders include:

- * Use of an interagency panel to review and approve administrative regulations.
- * Use of USDA order administrators.
- * Modify price objectives.

To deal with the concern that administrative committee recommendations

developed by industry members are approved without appropriate USDA review, an interagency panel could be established to review and approve administrative recommendations. Some interagency review now exists with requirements for regulatory review. But a more effective and efficient review might be achieved by defining operational criteria that are widely publicized and known to be the official USDA position.

Fruit and vegetable orders could be administered by USDA personnel rather than administrative committees. Milk marketing orders are currently administered through marketing order managers. This approach would replace industry administration of programs operated under public policy with public administration and would streamline the input to USDA from knowledgeable producers and handlers. It thus diminishes the self-help nature of orders, and would likely increase government administrative costs.

The use of parity prices as goals in administering agricultural programs has been frequently and soundly criticized as archaic and unrealistic. For most commodities under marketing orders, actual prices seldom approach parity levels, and if achieved, parity prices would yield abnormally high profits to growers. In these cases, the parity price objective is irrelevant from the standpoint of administering the orders, and inappropriate from the standpoint of efficient allocation of resources.

Since the parity goal is part of the Agricultural Marketing Agreement Act, its elimination would require amendment of the Act. But the Act permits the Secretary of Agriculture considerable discretion in interpreting "appropriate" prices. It specifically states that parity prices are to be approached by

"....gradual correction of the current level at as rapid a rate as the Secretary deems to be in the public interest... ." In other words, parity prices are not absolute goals. In administering order programs, USDA can specify guideline price levels and price changes without rigid reference to parity. These guidelines might be based on changes in costs, supply, and/or demand.

SUMMARY

For more than four decades Federal marketing orders have enabled growers of fruits, vegetables, and specialty crops to call upon the authority of the Department of Agriculture for regulating qualities and/or quantities of products marketed from their areas. These regulations are designed to compensate for, or overcome certain characteristics of agricultural markets--imbalances in marketing power, instability, incomplete information, and the external effects of individual firms' actions--that prevent free trading from being fully efficient. But some of the regulations themselves have potentials for reducing economic efficiency mainly by causing too little or too much of certain products to be produced or, once produced, to be used where the value to society is less than it could be.

The purpose of this review is to provide analysis useful for determining what, if any, changes are needed in Federal fruit, vegetable, and specialty crop marketing orders to reduce costs and improve efficiency. Effects of marketing orders on distribution of income, entrepreneurial independence, and number and size of farms also are examined.

A broad range of options are considered. These include retaining marketing orders as they are, completely

eliminating the programs, replacing them with other types of programs which serve some of the same purposes, and modifying program provisions and administration. Limitations imposed by the available time, data, and analyses prevented quantification of costs and benefits. Consequently, conclusions presented are the best that we can develop drawing on previous analyses and economic logic. Some of the most pressing economic issues remain unresolved. Nevertheless, it is believed that these results substantially clarify the issues and help show where the critical unanswered questions remain.

Unlike many government regulations imposed upon unwilling industries, marketing orders are promulgated only upon favorable vote by two-thirds, or three-fourths in some cases, of the producers in the production area. They can be eliminated by a simple majority vote of producers. Clearly, this binds the remaining dissenting minority to the provisions of the particular order. Twenty-seven of the 47 Federal marketing orders are concentrated in California, and the Pacific Northwest. More than one-third of the 47 marketing orders apply to crops grown wholly or partially in California. Florida and Texas have six and five orders, respectively, leaving nine orders scattered among the other States.

The physical traits and marketing conditions for these different commodities are widely varied. Many are perennials, some are annuals. Some, such as walnuts and frozen tart cherries are storeable between seasons. Citrus fruits can be stored on the tree during the season. Other commodities, such as peaches, are extremely perishable. For some of the commodities, including walnuts, almonds, raisins, and oranges, the United States is an important exporter. For others, including

tomatoes, onions, filberts and hops, imports compete strongly with domestic production.

Marketing Order Provisions

Marketing orders are diverse in their provisions and in the vigor with which authorized provisions are applied. While crops marketed under all but one of the 47 orders are subject to some form of quality control--grade, size and/or maturity--only half (24) have direct quantity control provisions. Five of the 24 have shipping holidays only, the mildest form of supply management.

Quality regulations, the most widespread type of order provision, help assure buyers that products offered for sale meet certain standards of acceptability. Minimum quality standards help promote and protect the reputation of a production area. However, minimum quality standards can serve as a weak form of supply control if they are set so high as to exclude products that buyers would find acceptable. Further, use of the section 8e provision to require imported produce to meet the same or comparable standards as domestic produce may reduce competition from imports. Thirteen of the commodities regulated by marketing orders are covered by the 8e provision.

Direct quantity control provisions have the greatest potential for price enhancement and resource misallocation. Producer sales allotments, the most restrictive form of supply control, are authorized in only four orders. Market allocation provisions, provided in six marketing orders, permit limitation of sales in a primary market (domestic, fresh) with the remainder moved to a secondary market (exports, processed). Seven orders have reserve pool provisions which restrict sales to the

primary market by holding a portion of the crop in a "set-aside" or reserve pool. The reserve may be returned to the primary market later due to a short crop or eventually diverted to a secondary market.

A second category of quantity control involves regulation of market flow within a season and includes handler prorates and shipping holidays. Five orders have only prorates, five orders have only shipping holidays, and four orders have both provisions. Market flow regulations attempt to even out within-season gluts and shortages and the corresponding low and high prices. Shipping holidays are a weak form of market flow regulation used to limit the buildup of supplies in markets during periods of minimum trade activity, usually associated with calendar holidays. Prorates limit the volume a handler can ship during a week. Extensive use of prorates may divert fruit suitable for domestic fresh use into secondary outlets.

A third category of provisions--market support activities--are employed by many of the orders. Standardization of containers and packs to promote uniformity in packaging; handler assessments for research on production or marketing; and assessments for promotion and advertising are included as market support activities. In addition to these specific provisions, considerable market information is generated through order operations.

Effects of Marketing Orders

Marketing order effects on economic efficiency, distribution of income, entrepreneurial independence, and number and size of farms were assessed. Most concerns about marketing orders are covered by this framework, but different

persons would attribute different levels of importance to each of these effects. Economic efficiency is valued by most of society and is potentially amenable to cost-benefit analysis. But there are differences of opinion about desirable directions of change for income distribution, entrepreneurial independence, and number and size of farms. Consequently, no useful purposes would be served by attempting to combine these performance indicators into a single measure of costs and benefits.

Economic efficiency involves using resources in a way that maximizes welfare for society as a whole. In an efficient economic system, waste is absent and each resource or product is used so that its contribution is maximized. Economic theory implies that a free market is efficient if, among other things, there are many buyers and sellers with perfect information. Imperfect information coupled with abrupt changes due to yield variations, and relatively small numbers of handlers and processors characterize agriculture. Marketing orders and other government marketing programs are employed to overcome or offset these conditions. But such programs have side effects which reduce efficiency. In particular, the quantity control provisions of marketing orders can cause resources to be diverted from uses where their value to society is highest. Marketing allotments divert resources away from production of the commodity under the order. Market allocation provisions tend to draw more resources into production of the covered commodity than is desirable. The major task in assessing the effects of marketing orders on efficiency is to weigh these losses due to resource misallocation against the gains from greater stability and improved information. Unfortunately, few studies are available that help quantify the gains and losses

believed to result from marketing orders.

In general, fruit and vegetable marketing orders have both positive and negative effects on economic efficiency. Effects contributing to increased efficiency include: greater seasonal and intraseasonal stability of producer prices and incomes; improved product uniformity and quality assurance for buyers; increased quantity and availability of marketing information; and greater amounts of yield-increasing and cost-reducing research. Marketing order effects reducing efficiency include: misallocation of resources, including excess resources being used in the production of navel oranges, valencia oranges, lemons and possibly filberts and walnuts, and deficient resources being used to produce hops and possibly spearmint oil; restricted firm growth; reduced price competition; and smaller ranges of quality choice for consumers. Other potential reductions in efficiency may arise from diversion of wholesome food to nonfood use; restriction of handling and packaging innovations; and reduction of trade flows. Because many of these effects cannot be quantified the net effect of marketing orders on efficiency or welfare remains uncertain.

As for the effects of marketing orders on the distribution of income, growers' incomes are increased in the short run by orders which reduce quantities marketed or successfully discriminate among markets. But any increase in returns attracts new entry and increased production driving prices down toward competitive levels. The major exceptions are the few marketing allotment programs which effectively limit entry. The holders of allotments may obtain continuing higher returns which would be reflected in the values of the allotments. But the earnings of

new growers, who must buy allotments, would be essentially the same as without the order.

Growers' incomes would be increased over the long term if their land and other resources are uniquely suited for producing a crop for which total demand is increased by a marketing order. This effect is believed to be relatively unimportant for most crops under marketing orders, since additional land can usually be brought into production without greatly increasing costs.

Consumers' costs for foods and beverages containing commodities produced under allotments are probably increased in the short run by the allotment programs. In the long run, the effect depends upon the magnitude of the gain from stabilization, if any, and whether or not the allotments are allowed to expand. The active market allocation programs initially increase consumers' food costs in the primary market and lower food costs on the secondary market. The average price to all consumers is increased. Again, the long-run effect depends upon the gains from stabilization, if any. Finally, consumers and producers may gain or lose over the long run depending upon whether seasonal allocation, storage, grade, size, and maturity standards, pack and container regulations, and research and promotion increase or reduce overall efficiency.

The freedom of individual growers and handlers to manage their businesses as they see fit is reduced by marketing orders. This element of freedom is willingly relinquished by the majority of growers who vote in favor of marketing orders. But some growers and handlers would prefer to be without the order restrictions.

Definitive evidence concerning the effects of marketing orders on farm size is lacking. Those orders that have producer allotments, market allocation provisions, or continuous prorates probably help some small growers survive who might otherwise leave the industry. The orders that establish grade, size, and maturity standards may also help small growers compete with large growers who might otherwise be better equipped to sell on a basis of brand image.

Marketing Order Options

Since we find mixed effects of marketing orders on efficiency and other goals of society, the question arises: What options are available and how do they compare with each other? Four major options were considered: (1) continuing marketing orders as they are; (2) eliminating marketing orders without substituting new Federal programs; (3) replacing marketing orders with other programs designed to overcome some of the same problems; and (4) modifying marketing orders to reduce certain effects and strengthen others.

In general, continuing current marketing orders would simply extend into the future the effects already noted. Likewise, the long-run effects of completely eliminating marketing orders or certain marketing order provisions are already apparent from the preceding discussion. However, the short-run effects of terminating orders or order provisions deserve attention. Gradual change may be preferred to sudden change as a means to facilitate industry adjustments. Some of the functions performed by the Federal programs may be taken over by cooperatives, State marketing orders, and other State and Federal regulations.

Where quantity controls have been binding, their termination would pose

short-run adjustment problems. The value of marketing allotments would drop to zero. Growers' incomes would be depressed temporarily until output was adjusted. Some growers, particularly those who have recently entered the business or enlarged their operations and carry heavy debt loads, could be forced out of business. The elimination of grade, size, maturity, and container regulations as well as research and promotion would show up as changes in demand and costs over many years.

Many of the problems dealt with by marketing orders could be addressed by other types of programs. For example, possible programs to overcome imbalances in marketing power include support of cooperatives, farmer bargaining, and marketing boards. Cooperatives, of course, are subject to "free-riders" if they attempt to raise prices for farmers. The "free-rider" problem could be partially overcome by legislation authorizing exclusive agency bargaining. The marketing boards used in other countries have many of the characteristics of marketing orders but often exert greater control, sometimes acting as the sole buyer and seller for the commodities covered.

Some type of regular Federal target price and direct payment program, acreage controls, or even price support and storage for the storeable commodities, might be considered. Support of fruit and vegetable prices by special government purchases could be expanded. Price support programs are generally difficult to administer without running into high costs or surplus disposal problems.

The information provided to growers and handlers by marketing orders might be replaced by information supplied through government reporting. And, the research and promotion activities could be supported by the various fruit and

vegetable industries through legislation authorizing check-off programs such as now exist for cotton, eggs, potatoes, and wheat products.

Finally, given that some of the marketing order provisions have mixed effects on efficiency and on the other measures of performance, one may ask if the provisions can be modified or their use controlled, so as to increase the positive effects and lessen the negative effects. For example, can some stabilization benefits be achieved or maintained while reducing distortions in resource use imposed by the allotment and market allocation provisions? One possibility would be to require, for every order with allotments, that the total industry allotment be increased regularly and systematically until the market value of allotments approached zero. Similarly, for market allocation provisions, the percentage allocation or prorate going to the primary market could be required to be increased systematically. Alternatively, application of prorates might be limited to only part of the season as in the Florida prorate programs, thus limiting the ability of the order to constrain total quantity going to the fresh market.

Several possibilities exist for making marketing order administration more responsive to growers' and consumers' concerns. These include changing voting rules for referenda and adding more non-industry representatives to administrative committees. Some possibilities also exist for strengthening USDA's ability to assure that marketing order actions are in the public interest. The Department's role in protecting consumers needs to be clarified. One step in this direction would be to replace the parity price criterion in the Act with a more meaningful measure. Establishing and

publishing specific guidelines and criteria used to evaluate proposed changes would inform a wider audience on the process. An interagency panel might be used to review and approve administrative regulations.

economic efficiency, although even these provisions may carry some stabilization benefits.

Keeping in mind that the benefits and costs of the different marketing order provisions remain unquantified, it nonetheless seems possible to rank the provisions according to which are most likely to contribute to, or detract from, overall economic efficiency. In general, the research provisions of marketing orders would be near the top in terms of contributions to efficiency. Marketing orders provide an effective means for sharing research costs that individual growers or handlers could not bear. Pack and container standardization also ranks high in terms of likely contributions to economic efficiency. The grade, size, and maturity standards, particularly those which remain essentially the same from year-to-year, also seem supportable on economic efficiency grounds. Without such standards there would likely be some growers or handlers who would spoil a product's image for their own short-term gain. When it comes to quantity control programs the partial season prorates and the reserve pools that operate as storage programs rather than surplus disposal programs seem most likely to contribute positively to efficiency. This assumes that imperfect information, risk, and uncertainty prevent individual growers and handlers from carrying out optimal storage. Market allocation and full season prorate programs rank low in terms of probable positive effects on efficiency. They may have a net negative impact, but when used infrequently they may be justified as a "safety-valve" to protect growers from disastrously low prices. Finally, the market allotment provisions are generally the most likely to detract from

APPENDIX A

WELFARE EFFECTS OF QUANTITY REGULATION

Economic theory provides a widely accepted framework for evaluating gains and losses over a limited range of policy questions. This framework underlies the analysis and conclusions presented in the body of this report. The text treatment is designed for the general reader. Detailed arguments are not included since lengthy explanations would be required. These more detailed arguments are presented here.

The following topics are considered in turn: (1) major assumptions; (2) stabilization effects of marketing orders; (3) price discrimination; and (4) marketing allotments.

Major Assumptions

Consumers' welfare is measured by consumers' surplus, which is represented by the area on the price-quantity axis below the demand curve and above the price line. The key assumption in the case of the individual consumer is that the marginal utility of income is constant; alternatively, one could recognize violations of this assumption in the market (Marshallian) demand curves usually estimated and attempt to derive compensated demand curves with the desired characteristic, but this is seldom done.^{1/} Fortunately, Willig has shown that the error introduced by using the usual econometrically estimated market demand curves rather than compensated demand curves is generally small--less than 2 percent.

^{1/} Hausman has recently presented a procedure for doing this which he recommends for wider use.

The aggregation of consumers' surplus over many consumers by simple addition, which is the usual procedure, introduces a serious concern. An unweighted summation is a valid measure of total welfare only if the prevailing income distribution is considered appropriate.^{2/} If not, the aggregation of consumers' surplus should include multiplying each consumer's surplus (or the consumers' surpluses of homogeneous groups) by appropriate weights prior to summation.

Producers' welfare is measured by the economic rent accruing to the factors of production--payments above the minimum needed to keep factors engaged in the production process. In many cases, especially those dealing with short-term analyses, the rents can be appropriately measured by producers' surplus. As in the case of aggregated consumers' surplus, the aggregation of rents to producers by simple summation requires an assumption about the appropriate income distribution among producers.

Total private welfare in any period is the sum of consumers' surplus and producers' rent. Equal weights for consumers and producers are correct only if distribution of income between them is deemed appropriate. If not, weights should be selected and applied to the surplus and rent measures prior to their addition.

Total private welfare over several time periods is the weighted sum of the

^{2/} For those readers who are inclined to view this as an insurmountable obstacle to measuring aggregate welfare, it should be noted that the same assumption is made whenever national income is discussed.

welfare in each period, with the weights selected so as to reflect the social rate of discount. Short-run and long-run impacts differ considerably in the case of evaluations of marketing orders, so this aspect of the analysis is critical in empirical studies. In this appendix, however, the analysis is limited to the separate identification of short-term and long-term impacts in the context of a general conceptual model; the aggregation of impacts over time is not dealt with explicitly.

Stabilization Effects of Marketing Orders

Some conclusions (or lack of conclusions) in this study rest heavily on the notion that marketing orders can contribute to economic efficiency and social welfare by stabilizing prices and quantities. These gains through stabilization could possibly arise in two ways. First, certain order provisions may result in more nearly optimal storage than would otherwise occur. In particular, the reserve pool programs may foster more nearly optimal year-end carryover, while the market flow provisions may lead to improved intraseasonal storage. Second, and more important, all of the quantity control provisions have potentials for stabilizing prices and reducing growers' uncertainty; this can be expected to shift the supply curves to the right. The two possible effects are examined in turn.

Effects of Carrying Reserves on Welfare

Instability may either contribute to or detract from efficiency. Indeed, complete stability would rule out such widely desired changes as economic growth and the adoption of new technology. It is the fluctuations in quantity or price back and forth about a trend that are mainly of concern here.

Economic fluctuations may be systematic and predictable, such as a regular seasonal pattern in price, or random and unpredictable, such as yield and price changes due to weather. Even predictable price and output variations can increase costs over what they would be otherwise. Examples include the costs of storage from the time of production to the time of utilization and the costs of maintaining plant capacity that is idle part of the time, but needed to cover peak loads.

Since the year-to-year changes in the demand for food crops are relatively small, price stabilization under marketing orders mainly involves evening out fluctuations in supply. Reserve pools do this directly by shifting supplies from some years with large crops to years with smaller crops. Similarly, the intraseasonal allocation programs, particularly prorates, and reserve pools established early in the marketing season but released later in the same season, can shift supplies from weeks when shipments would be large to weeks when shipments would otherwise be less.

The welfare effects of carrying reserves have received much attention by economic analysts. One group of studies examines whether the benefits from such stabilization accrue to producers or consumers. Here a major conclusion is that under fluctuating supply and demand the carrying of reserves benefits society as a whole, but the effects on consumers or producers as a group depends upon factors such as the shape of the demand and supply curves and the source of the instability (Turnovsky). Another area of study pertains to the determination of optimal amounts of carryover (Gardner). To date, such studies have dealt mainly with grains, but the approach would seem to be

applicable in managing reserve pools of marketing order commodities.

Supply Curve Shifts from Marketing Order Stabilization

The potential gains from stabilization are less obvious for provisions such as marketing allotments and market allocation than for carrying reserves. If such provisions are to increase welfare by stabilizing prices and shifting supply curves to the right, there must be: (1) a positive relationship between stability and supply response and (2) a mechanism whereby marketing order provisions increase stability.

Price risk or uncertainty can increase production costs in several ways:

1. If producers are risk averse, and if the risks cannot be covered by insurance or spread among others through mechanisms such as futures trading, then producers will require a higher rate of return on a risky enterprise than on a less risky enterprise.

2. Lenders may charge higher rates of interest or limit the amount they will loan on a risky enterprise compared to a less risky enterprise.

3. Allocation of resources by growers and handlers is subject to greater errors when price is uncertain.

Eliminating any of these costs of instability can, in theory, shift the supply curve to the right. As shown in figure 1, a rightward shift of supply leads to an unequivocal increase in consumers' surplus, a change in producers' surplus (rent) which may be either positive or negative, and an unequivocal increase in total social welfare.

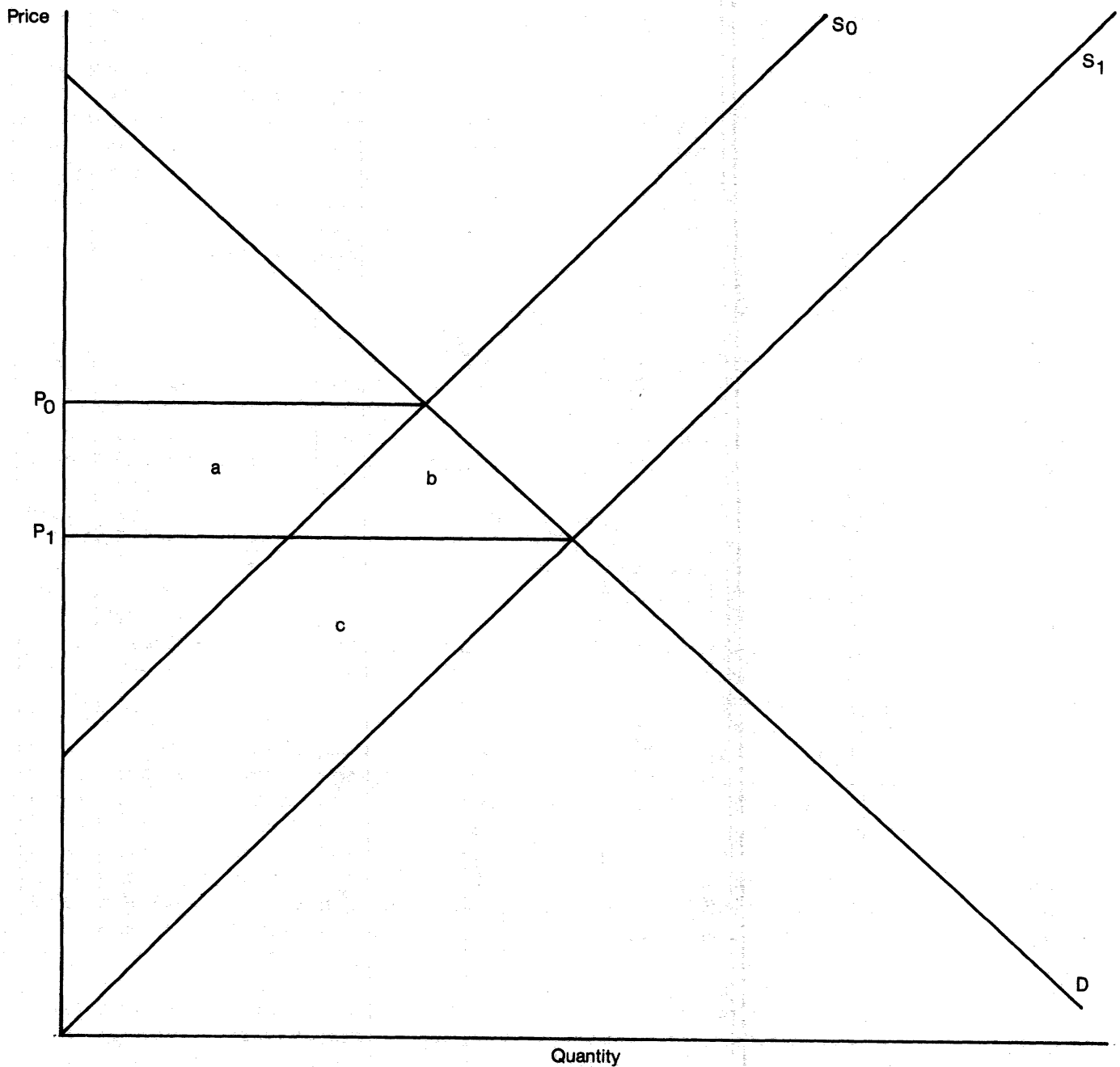
General support for the notion that farmers and other businessmen are risk averse comes from observing their attempts to reduce risks where possible by such means as buying insurance. Moreover, analysts who have attempted to quantify farmers' behavior under risk have found considerable evidence of risk aversion (see Hildreth and Knowles, Lin, and Lin et.al.). But the degree of risk aversion varies among individuals and some appear to be risk neutral or to prefer risk under certain circumstances.

Instead of measuring farmers' risk aversion one can attempt to directly measure the effect of risk on the quantities of products farmers produce. This can be done by entering a risk variable, such as the standard deviation of price for recent years, into a supply equation in an econometric model. Using such procedures several analysts have found significant effects of risk on supply (see Hammig; Anderson et.al.; Just, Feb. 1974, June 1974, 1975; Lin; Lin et.al.; Officer and Halter; and other sources cited therein).

In summary, past studies generally support the notion that greater stability tends to shift the supply curve for agricultural products to the right. But determining the magnitude of this effect and its impacts on different members of society would require detailed analyses which generally are not available for commodities under marketing orders.

Assuming that reduction of instability would increase supply, the question remains as to whether marketing order provisions can actually stabilize prices. In contrast to the reserve programs, which flatten both peaks and troughs in prices, the other quantity control provisions such as marketing allotments and market allocation are

Figure 1--Impacts of increased supply on consumers' and producers' surplus



Gain in consumers' surplus:

$$a + b$$

Net gain to producers' surplus:

$$c - a$$

Total net gain to society:

$$b + c$$

asymmetrical in their effects. They set upper bounds on quantities sold in certain markets or over certain periods, but no lower bounds. Thus, they directly limit price troughs, but not price peaks. However, it may be presumed that the price peaks are indirectly constrained over time, since growers are not exposed to the very low prices that could lead them to cut back production resulting in subsequent shortages and high prices.

Elsewhere in this appendix, price discrimination through market allocation is shown to have the potential to raise growers' returns if certain conditions are met. It follows that a degree of price or return stabilization can be obtained if market allocation provisions are applied only during years of large crops that would otherwise result in exceptionally low prices and low returns for growers. Of course, any stabilization gained in this way comes at a cost in terms of resource misallocation, as will be shown later.

Marketing allotments reduce fluctuations in supplies by discouraging growers from applying excessively large amounts of inputs. Second, during years with exceptionally high yields, allotments may force part of the commodity into a reserve pool or disposal, preventing the price for the remainder from declining as far as it otherwise would. This kind of stabilization is also accompanied by losses due to misallocation of resources.

In summary, theory suggests that certain types of marketing order provisions, when judiciously applied, have stabilizing potentials which can have a positive impact on efficiency and welfare. The likely magnitude of these impacts, however, has not been established. In addition, offsetting losses occur due to resource misallocations, as

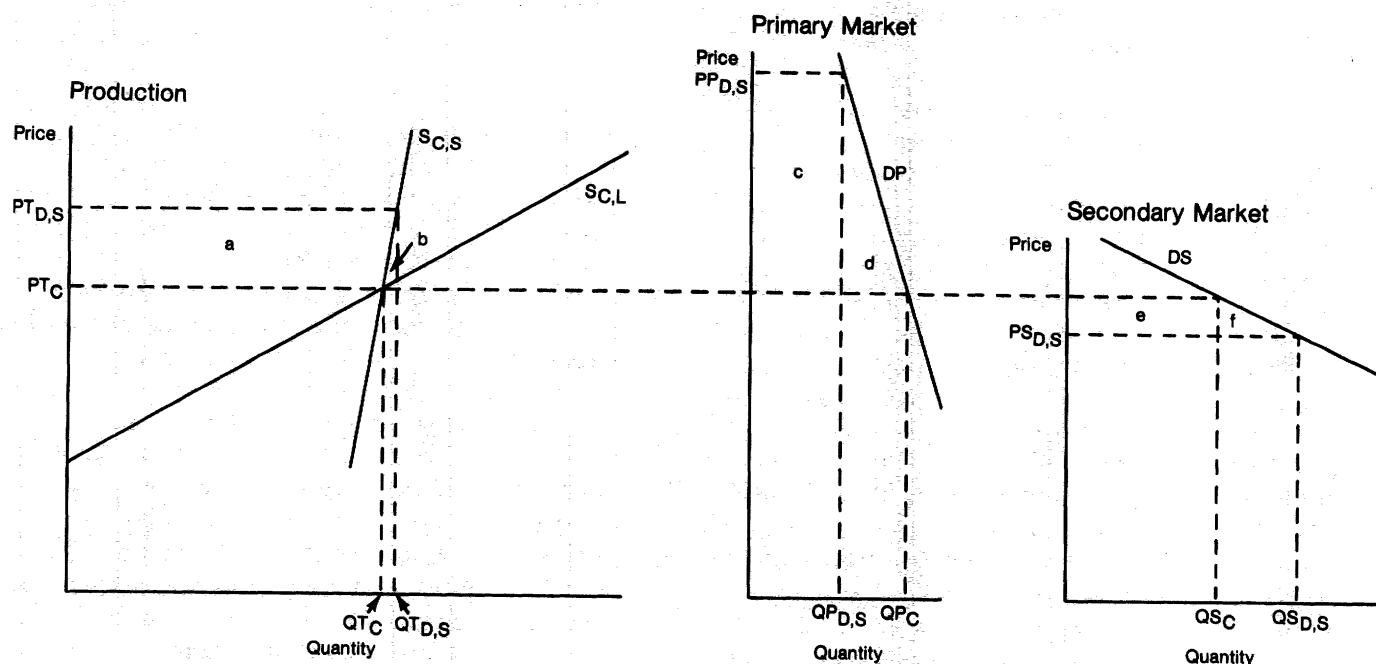
discussed in the next section, so the net effects remain uncertain. To measure these gains and losses would generally require more information about growers' response to risk, and other characteristics of supply and demand, than is now available. Finally, we have not established that the quantity control provisions of marketing orders are the most efficient means to attain greater stability. The body of this report identifies several alternative means of stabilization which also show a potential for reducing instability and increasing welfare.

Price Discrimination

As noted in the text, price discrimination among primary and secondary markets may be accomplished directly by market allocations, or less directly through either market flow regulations or quality controls. The following analysis abstracts from the provisions used to implement price discrimination and concentrates on the resulting impacts.

The freely competitive solution, an important base of comparison, is presented in figure 2. Demand is assumed to be more inelastic in the primary than the secondary market. Short-term supply is inelastic due to difficulties in adjusting production in a brief time period. Long-term supply is very elastic since land, capital, and labor may be shifted from production of one commodity to another over a multi-year time period. The freely competitive equilibrium occurs at a price (PT_C) which brings forth production (QT_C) equal to the sum of the demands in the primary and secondary markets (QP_C and QS_C , respectively) and where the production sector is operating on the long-term as well as short-term supply function.

Figure 2-- Short-term impacts of price discrimination compared to a freely competitive market.



Symbols:

- DP - Demand in the primary market
- DS - Demand in the secondary market
- $P_{P_{D,S}}$ - Short-term price in the primary market with discrimination
- $P_{S_{D,S}}$ - Short-term price in the secondary market with discrimination
- P_{T_C} - Price with free competition
- $P_{T_{D,S}}$ - Short-term producer price with discrimination
- Q_{P_C} - Sales in the primary market with free competition

- $Q_{P_{D,S}}$ - Short-term sales in the primary market with discrimination
- Q_{S_C} - Sales in the secondary market with free competition
- $Q_{S_{D,S}}$ - Short-term sales in the secondary market with discrimination
- Q_{T_C} - Production with free competition
- $Q_{T_{D,S}}$ - Short-term production with discrimination
- $S_{C,L}$ - Long-term supply with free competition
- $S_{C,S}$ - Short-term supply at initiation of discrimination

The introduction of price discrimination entails restricting quantity in the primary market and selling the remainder of production in the secondary market. The short-term impacts of this policy are shown in figure 2. Restricting sales in the primary market to $Q_{P,D,S}$ increases price to $PP_{D,S}$. The increased quantity in the secondary market leads to a lower price ($PS_{D,S}$), but the price decline is less than the price rise gained in the primary market. Assuming that total receipts are divided equally among the quantities produced, producers receive a unit price ($PT_{D,S}$) higher than the free market price (PT_C). The increase in producers' rent is the area "a". The loss to consumers in the primary market is the area "c plus d". The gain to consumers in the secondary market is the area "e plus f". Summing these three welfare changes, the net loss in the welfare of society can be represented by the sum of the three triangles, "b plus d plus f".

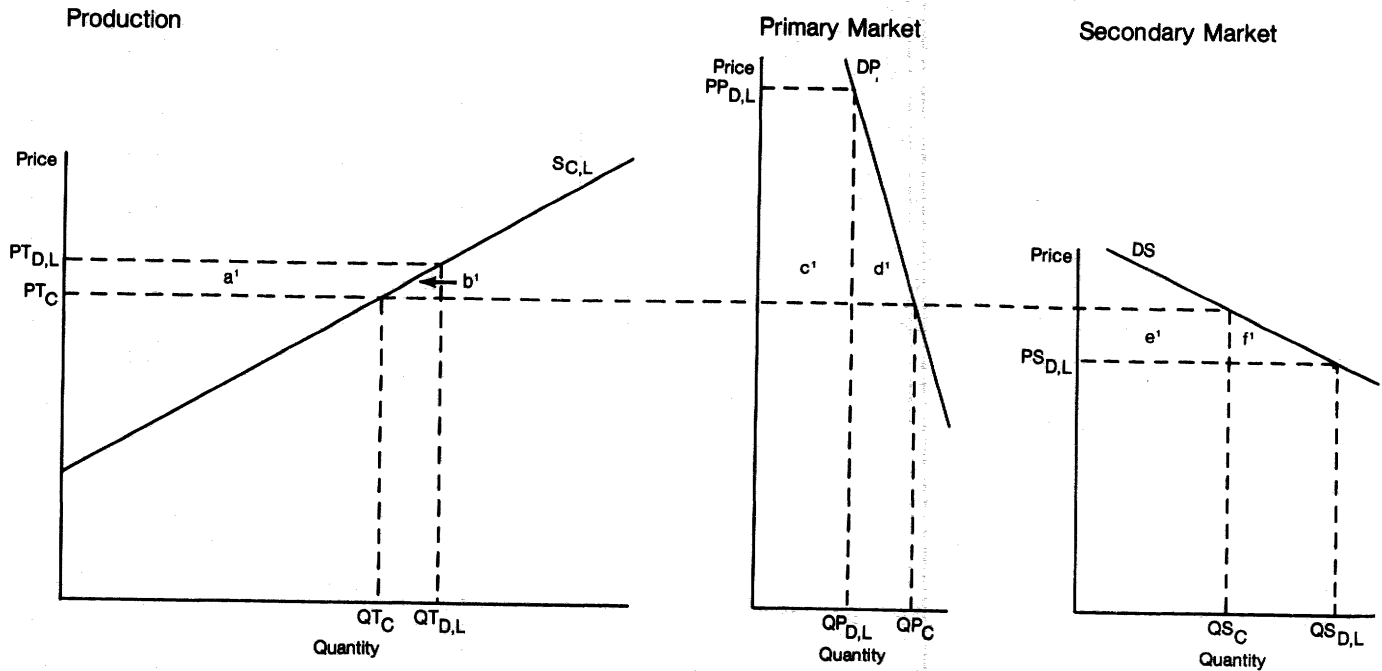
In the long term, illustrated in figure 3, producers expand production in response to the higher producer price. Production is shown to increase from a level of Q_{T_C} consistent with a free market solution to $Q_{T_{D,L}}$. Producer price ($PT_{D,L}$) is raised above the price in a free market (PT_C). In the long term, the loss to consumers in the primary market equals area "c' plus d'", and the gain to consumers in the secondary market equals area "e' plus f'". The increased producer rent is "a'". This solution is strictly analogous to the short-term solution described above; for example, the net loss in social welfare relative to a free market can be shown to equal "b' plus d' plus f'". Continuing for the moment to disregard risk response, the long-term impacts relative to the short-term would be smaller gains for producers, and generally smaller losses

for consumers in the primary market and larger gains for consumers in the secondary market.

If the price discrimination program is administered so as to stabilize producer prices relative to those experienced in the free market, the supply curve would be expected to shift to the right. This shift is shown in figure 4 as the difference between $S_{C,L}$ and $S_{R,L}$. Since the supply curve shift tends to lower price while price discrimination raises the producers' price, the direction of the net effect on the producers' price cannot be determined by theory alone. Including risk response, the gain in producers' rent compared to the free market is measured by "a* plus g* plus h* plus i*". The loss to consumers in the primary market is "c* plus d*" and the gain to consumers in the secondary market is "e* plus f*". Summing the three welfare changes, the net change in society's welfare can be represented by the area "h* plus i* minus b* minus d* minus f*". The first two terms reflect the gains due to the increase in supply associated with less risk. Thus, inclusion of risk response leads to the conclusion that the change in net social welfare associated with the long-term adoption of market discrimination policies is indeterminate in the general case.

The short-term impacts of eliminating price discrimination are shown in figure 5. The inelastic nature of short-term supply ($S_{D,S}$) in combination with an inelastic demand in the primary market (DP) causes a large price decline (from $PP_{D,L}$ to $PT_{C,S}$) to be necessary to clear the market with no price discrimination. Producers would suffer lost rent (area "j plus k") relative to the long-term solution with market discrimination.

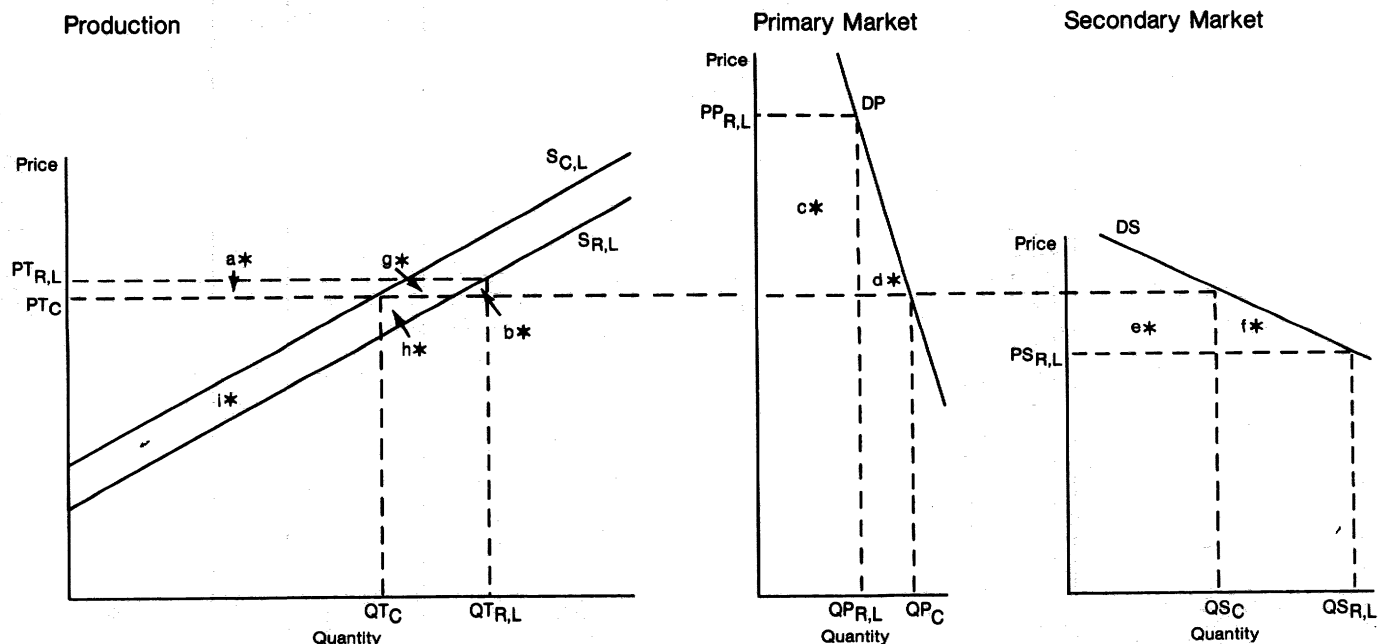
Figure 3--Long-term Impacts of price discrimination compared to a freely competitive market



Symbols:

- | | |
|--|--|
| DP - Demand in the primary market | $QP_{D,L}$ - Long-term sales in the primary market with discrimination |
| DS - Demand in the secondary market | QS_C - Sales in the secondary market with free competition |
| $PP_{D,L}$ - Long-term price in the primary market with discrimination | $QS_{D,L}$ - Long-term sales in the secondary market with discrimination |
| $PS_{D,L}$ - Long-term price in the secondary market with discrimination | QT_C - Production with free competition |
| PT_C - Price with free competition | $QT_{D,L}$ - Long-term production with discrimination |
| $PT_{D,L}$ - Long-term producer price with discrimination | $S_{C,L}$ - Long-term supply with free competition |
| QP_C - Sales in the primary market with free competition | |

Figure 4--Long-term impacts of price discrimination combined with a shift in the supply curve

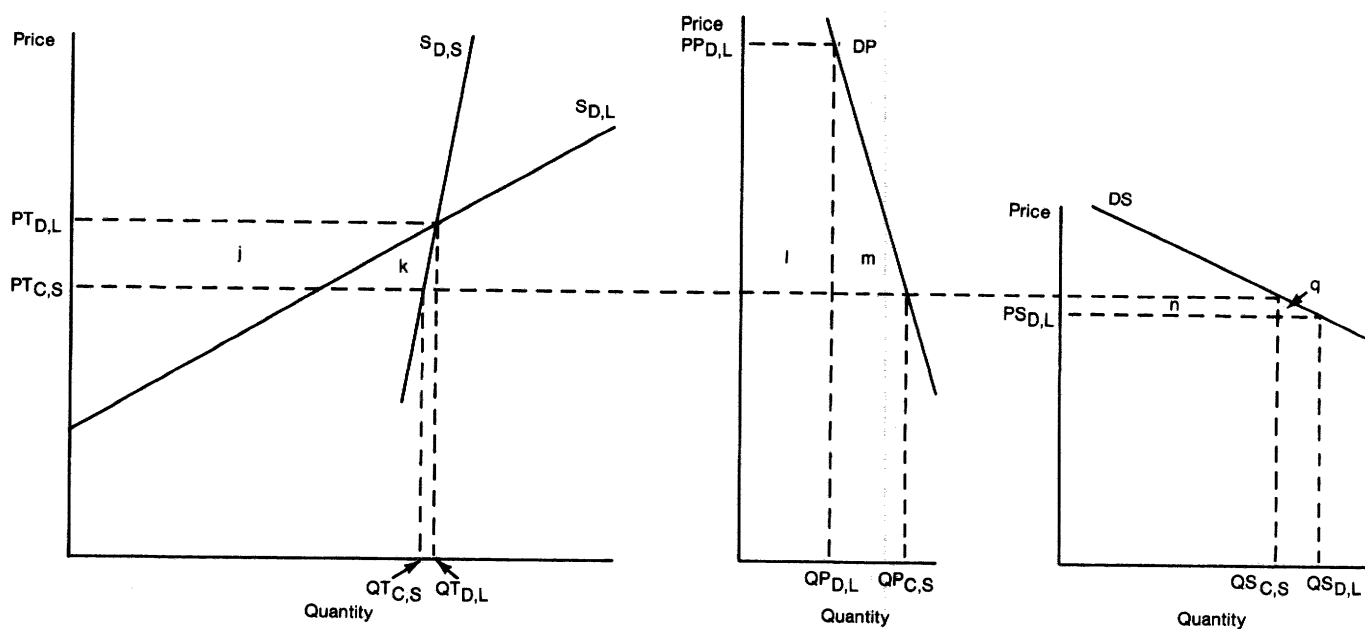


Symbols:

- DP - Demand in the primary market
- DS - Demand in the secondary market
- $PP_{R,L}$ - Long-term price in the primary market with discrimination
- $PS_{R,L}$ - Long-term price in the secondary market with discrimination
- PT_C - Price with free competition
- $PT_{R,L}$ - Long-term producer price with discrimination
- QP_C - Sales in the primary market with free competition

- $QP_{R,L}$ - Long-term sales in the primary market with discrimination
- QS_C - Sales in the secondary market with free competition
- $QS_{R,L}$ - Long-term sales in the secondary market with discrimination
- QT_C - Production with free competition
- $QT_{R,L}$ - Long-term production with discrimination
- $S_{C,L}$ - Long-term supply with free competition
- $S_{R,L}$ - Long-term supply with discrimination and risk response

Figure 5--Short-term Impacts of eliminating price discrimination



Symbols:

- DP - Demand in the primary market
- DS - Demand in the secondary market
- $PT_{C,S}$ - Short-term producer price with elimination of discrimination
- $PS_{D,L}$ - Long-term price in the secondary market with discrimination
- $PT_{C,S}$ - Short-term producer price with elimination of discrimination
- $PT_{D,L}$ - Long-term producer price with discrimination
- $QP_{C,S}$ - Short-term sales in the primary market with elimination of discrimination

- $QP_{D,L}$ - Long-term sales in the primary market with discrimination
- $QS_{C,S}$ - Short-term sales in the secondary market with elimination of discrimination
- $QS_{D,L}$ - Long-term sales in the secondary market with discrimination
- $QT_{C,S}$ - Short-term production with elimination of discrimination
- $QT_{D,L}$ - Long-term production with discrimination
- $S_{D,L}$ - Long-term supply with discrimination and risk response
- $S_{D,S}$ - Short-term supply upon elimination of discrimination

Consumers in the secondary market would also experience losses (area "n plus q"), but consumers in the primary market would enjoy large gains (area "1 plus m"). The losses to producers would be expected to occur even if the original gains from the initiation of price discrimination had long since been largely eroded away by increases in production. The critical factors underlying producers' loss of rent in the short term are (1) the excess resources devoted to the sector relative to the free competition norm and (2) the rigidity of short-term supply due to large fixed investments and long lifetimes for productive assets. The degree of price enhancement relevant to the free market norm is not a good indicator of likely adjustment problems in this particular context.

The long-term impacts of eliminating price discrimination would be the converse of the long-term impacts of initiating discrimination. These latter impacts were discussed in detail above and shown in figures 3 and 4. Summarizing the converse case, theory suggests that the long-term impacts of discontinuing price discrimination and moving to a freely competitive market are: (1) production would be smaller, (2) the change in the producer price would be indeterminate if risk response occurs--if not, producer price would fall, (3) sales in the primary market would increase, (4) price in the primary market would decline, (5) sales in the secondary market would decrease, (6) consumers in the primary market would enjoy gains, (7) consumers in the secondary market would suffer losses, (8) the change in welfare of producers would be indeterminate if risk response occurs--if not, producers would be worse off, and (9) the net change in social welfare would be indeterminate if risk response occurs--if not, the net change would be positive.

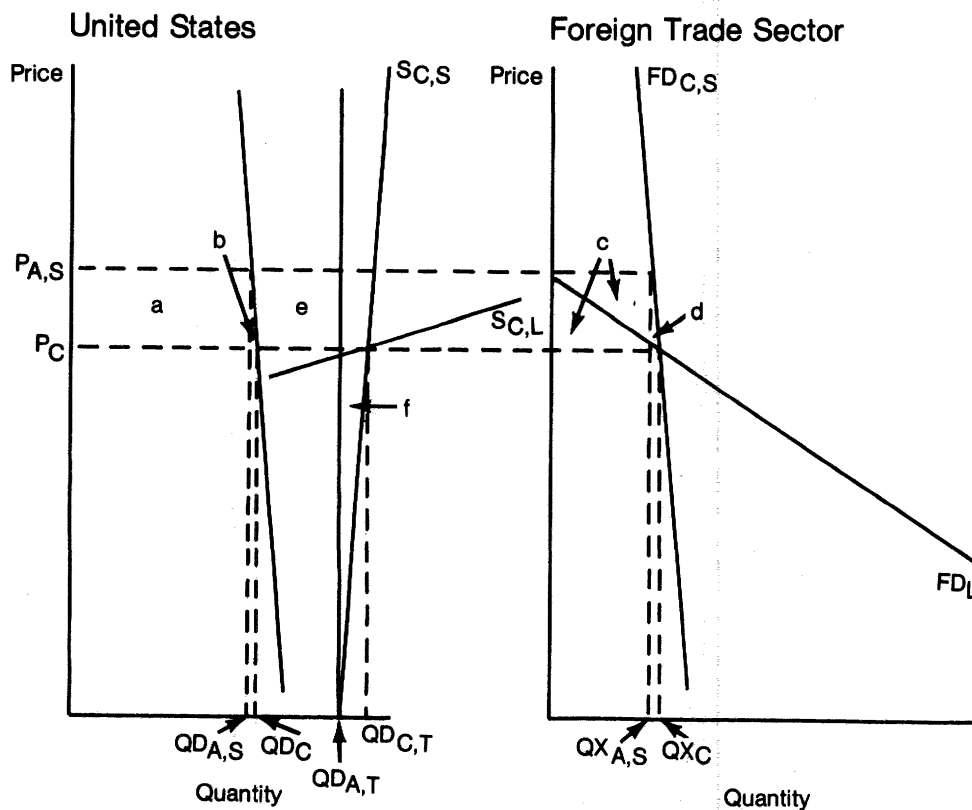
Marketing Allotments

Marketing allotments restrict the amounts which producers may sell. The commodities for which allotments authorized by Federal marketing orders have been restrictive are hops and spearmint oil. Both enter into international trade, and the analysis will proceed in that context.

The freely competitive solution, which will serve as a base of comparison throughout the analysis, is illustrated in figure 6. Short-term demand and supply functions ($D_{US}, FD_{C,S}, S_{C,S}$) are inelastic as a result of difficulties in adjusting either production or consumption in a brief time period. Long-run domestic supply ($S_{C,L}$) is very elastic, for reasons noted in the previous section. Long-term foreign demand (FD_L) is more elastic than in the short run ($FD_{C,S}$) as foreign producers adjust production in response to changed prices and thereby alter the need for U.S. exports. The freely competitive equilibrium occurs at a price (P_C) which brings forth U.S. production ($QD_{C,T}$) equal to the sum of domestic and foreign demand (QD_C and QX_C , respectively) and where both the domestic and foreign sectors are operating on their long-term as well as short-term functions.

In the short term, the imposition of restrictive marketing allotments ($QD_{A,T}$) will reduce U.S. marketable supplies. This situation is also illustrated in figure 6. The new short-term equilibrium occurs at a higher price ($P_{A,S}$) where the marketing allotment equals the sum of domestic demand ($QD_{A,S}$) and short-term foreign demand ($QX_{A,S}$). Smaller quantities are sold in each of

Figure 6--Short-term Impacts of adopting marketing allotments compared to a freely competitive market



Symbols:

- | | |
|--|--|
| D_{US} - U.S. demand | $QD_{A,T}$ - U.S. marketing allotment |
| $FD_{C,S}$ - Net short-term foreign demand with free competition | QD_C - U.S. consumption with free competition |
| FD_L - Net long-term foreign demand | $QD_{C,T}$ - U.S. production with free competition |
| $P_{A,S}$ - Price in short term with allotments | $QX_{A,S}$ - U.S. short-term exports with allotments |
| P_C - Price with free competition | QX_C - U.S. exports with free competition |
| $QD_{A,S}$ - U.S. short-term consumption with allotments | $S_{C,L}$ - U.S. long-term supply with free competition |
| | $S_{C,S}$ - U.S. short-term supply with free competition |

the domestic and foreign markets; the relative size of the adjustments is a function of the relative price elasticities of short-term demand. The loss of domestic consumers' welfare is represented by the area "a plus b". The loss to foreign countries is shown by the area "c plus d". The net gain in domestic producers' rent, assuming they are the recipients of the allotments, equals the area "a plus b plus e minus f". Since area "b plus e" equals area "c", the net welfare loss to world society equals the area "b plus d plus f". From a U.S. perspective--that is, ignoring the losses to foreign countries--the net gain to its citizens equals area "e minus f". The net gains to producers, including discounted expected future gains as well as current gains, will be capitalized into the value of the allotments.

Summarizing the short-term impacts of marketing allotments in words rather than geometry, theory suggests (1) smaller quantities will be sold in each of the domestic and foreign markets, (2) the price will be higher, (3) consumers in both domestic and foreign markets will be made worse off, (4) producers will be made better off, and their gains will be capitalized into the value of the allotments, and (5) world society suffers a net loss.

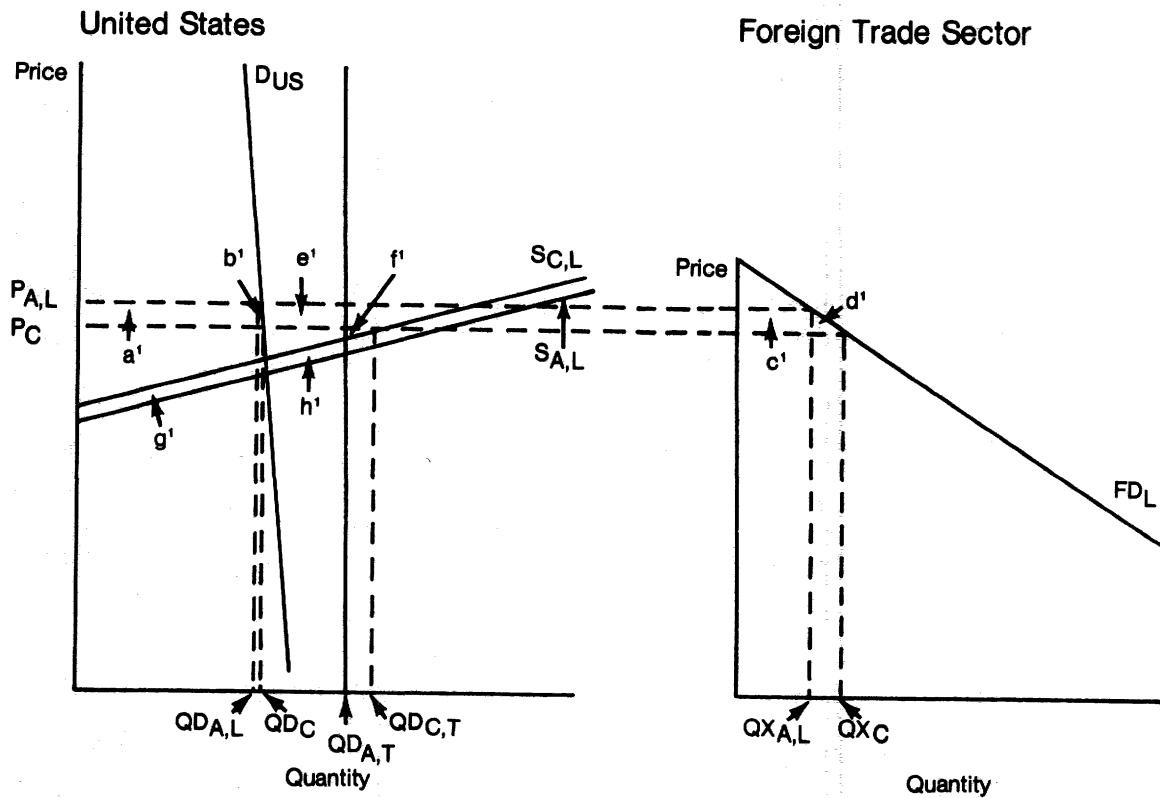
The long-term impacts of marketing allotments for internationally traded commodities differ, in general, from short-term impacts in important respects as shown by a comparison of figures 6 and 7. Foreign producers expand production in response to higher prices which, in turn, reduces U.S. net exports and decreases price levels from the short-term solution (i.e., from $P_{A,S}$ in figure 6 to $P_{A,L}$ in figure 7). Analytically, the response of foreign producers is shown as a movement to a price-quantity solution on

the long-term, as compared to the short-term, foreign demand equation. Domestic producers are, of course, constrained from increasing sales by the marketing allotment program. If the allotment program reduces risk as seems likely, the domestic long-term supply will shift to the right, as shown by the difference between $S_{C,L}$ and $S_{A,L}$ in figure 7.

The long-term impacts of marketing allotments will now be compared to both the freely competitive and the short-term solutions. Relative to free competition the loss of domestic consumers' welfare is shown by the area "a' plus b'" and the loss of foreign countries' welfare by the area "c' plus d'". Each of these losses is smaller than the corresponding losses in the short term, with the degree of change being a function of the difference in elasticity between short-term and long-term foreign demand. The net gain in rents to holders of allotments, relative to the free market solution, equals the area "a' plus b' plus e' minus f' plus g' plus h'". The last two terms reflect the gains due to the increase in supply associated with less risk. Note that, whereas in the general case consumers share in the gains due to a supply response to less risk (see figure 1 and associated discussion), allotments prevent any increase in production and thereby preserve the gains for allotment holders rather than permit the gains to be passed through to consumers. The net gains to allotment holders will, of course, be capitalized into the value of allotments.

Relative to the short-term solution, holders of allotments may be either better or worse off in the long term depending on the circumstances of their industry. The erosion of price due to foreign competition (from $P_{A,S}$ in

Figure 7--Long-term impacts of adopting marketing allotments compared to a freely competitive market



Symbols:

D_{US} - U.S. demand
 $F_{D,L}$ - Net long-term foreign demand
 $P_{A,L}$ - Price in long term with allotments
 P_C - Price with free competition
 $Q_{D,A,L}$ - U.S. long-term consumption with allotments
 $Q_{D,A,T}$ - U.S. marketing allotment

$Q_{D,C}$ - U.S. consumption with free competition
 $Q_{D,C,T}$ - U.S. production with free competition
 $Q_{X,A,L}$ - U.S. long-term exports with allotments
 $Q_{X,C}$ - U.S. exports with free competition
 $S_{A,L}$ - U.S. long-term supply with allotments (assuming risk response)
 $S_{C,L}$ - U.S. long-term supply with free competition

figure 6 to $P_{A,L}$ in figure 7) reduces producers' rent, as shown by the lesser area encompassed by "a' plus b' plus e'" in figure 7 as compared to "a plus b plus e" in figure 6. On the other hand, fewer factors are fixed in the long term so producers are giving up less profit by having to reduce production from $QD_{C,T}$ to $QD_{A,T}$; this lesser loss is shown by the much smaller size of "f'" in figure 7 relative to "f" in figure 6. Finally, as noted earlier, long-term gains in rents to factors in limited supply accrue as a result of greater stability, i.e., "g' plus h'". The net effect of these positive and negative impacts on rents will vary with each particular industry.

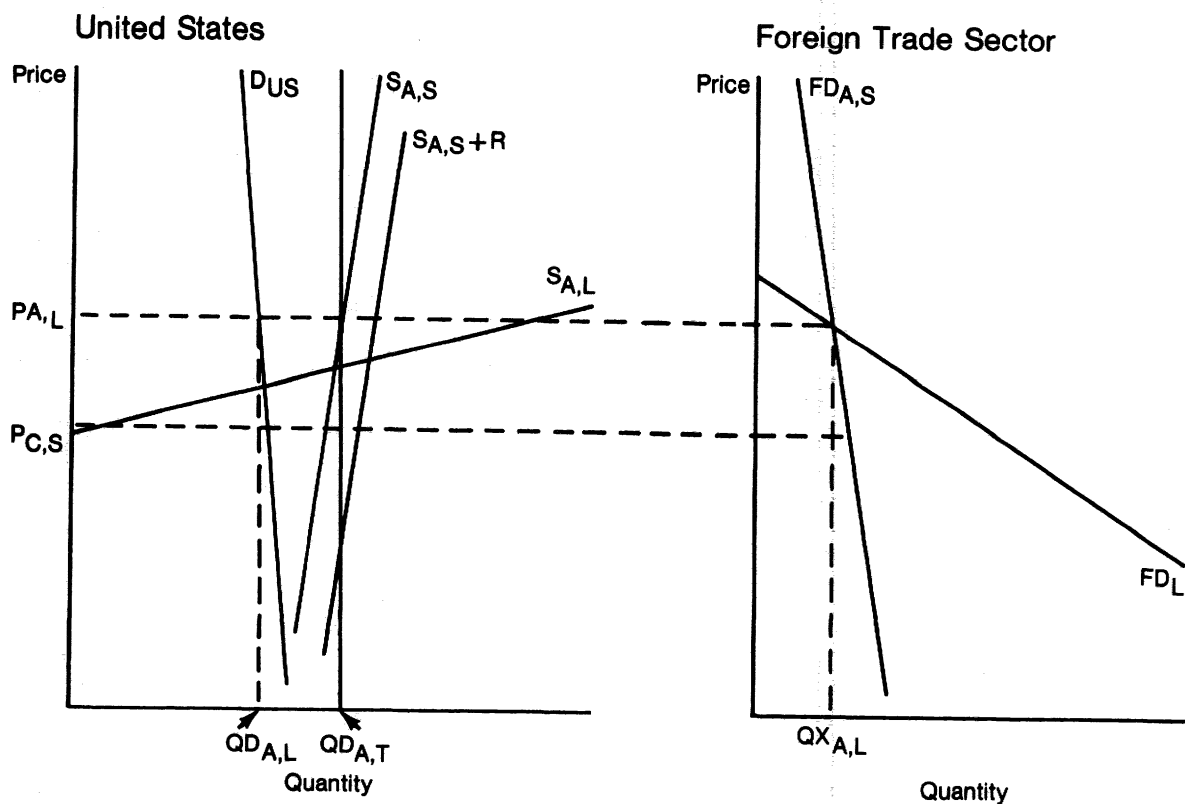
The net welfare change for world society, comparing the long-term allotment solution to the freely competitive market, is also indeterminant. The gains of greater stability ("g' plus h'") coexist with deadweight losses due to distortions in production and consumption ("b' plus f' plus d'"). Within the United States, the net change in welfare equals area "e' plus g' plus h' minus f'" which will often be positive in view of the small size of "f'". But if the supply curve shift from reducing instability was small, and if foreign demand was almost perfectly elastic, area "g' plus h'" and "e'" would be small, and the loss measured by "f'" could dominate.

In summary, the long-term impacts of marketing allotments for internationally traded commodities relative to a free market depend upon the magnitude of the resulting supply curve shift and the nature of foreign demand. Assuming that the allotments remain fixed and are not allowed to increase with shifts in the supply curve, the impacts of marketing allotments are (1) smaller quantities will be sold in each of the domestic and

foreign markets, (2) the price will be higher, (3) consumers in both domestic and foreign markets will be made worse off, and (4) holders of allotments will be made better off and their gains will be capitalized into the value of the allotments. Moreover, if the demand for exports has substantial downward slope or the supply curve shift from increased stability is substantial, U.S. society will enjoy a net gain. In either case, the net welfare change for world society is indeterminate. Producers who enter the industry by purchasing allotments and other input factors after it is in long-run equilibrium do not enjoy greater rents relative to their investment than do other sectors of the economy. Thus, such recent entrants are not enjoying a supranormal return due to the allotment program. As subsequent analysis will show, however, the continuation of the program does protect them from subnormal rates of return. Finally, if the supply curve shift from increased stability is large, and if allotments are not kept in place but allowed to expand with shifting supply, conclusions (1), (2) and (3) above, about the effects on quantities, prices, and consumer welfare in domestic and foreign markets, do not necessarily hold.

The short-run impacts of discontinuing marketing allotments are illustrated in figure 8. The value of the allotments would fall to zero. The scale of the short-run impacts on the price and quantity of the commodity would depend heavily upon the amount of stocks, if any, accumulated as a result of the allotment program. If stocks were at "normal" levels in the sense of being comparable to stocks which would be held in a market without allotments, the transition to long-term competitive equilibrium would be relatively smooth. The actions of producers to increase

Figure 8--Short-term Impacts of discontinuing marketing allotments



Symbols:

D_{US} - U.S. demand
 $FD_{A,S}$ - Net short-term foreign demand with elimination of allotments
 FD_L - Net long-term foreign demand
 $P_{A,L}$ - Price in long term with allotments
 $P_{C,S}$ - Price in short term with elimination of allotments, assuming sizeable stocks

$QD_{A,L}$ - U.S. long-term consumption with allotments
 $QD_{A,T}$ - U.S. marketing allotment
 $QX_{A,L}$ - U.S. long-term exports with allotments
 R - Stocks
 $S_{A,L}$ - U.S. long-term supply with allotments (assuming risk response)
 $S_{A,S}$ - U.S. short-term supply with elimination of allotments, assuming normal stocks

production would be constrained by the normal rigidities of short-term supply as represented by curve $S_{A,S}$ in figure 8. Over a few years the short-run supply curve would shift along the long-run supply curve until the long-run competitive solution depicted in figure 7 was restored.

If stock levels are well above the "normal" levels defined above--for example, stock levels of "R" with total short-term supply represented by " $S_{A,S} + R$ " in figure 8--the short-term adjustment problems would be much more severe. The inelasticity of short-term demands, domestic (D_{US}) and foreign ($FD_{A,S}$), implies that a major drop in price (such as to $P_{C,S}$ from $P_{A,L}$) would be required to clear the market. Consumers would enjoy large transitory gains while producers would suffer major losses for a brief time.

The long-term impacts of eliminating marketing allotments would be the converse of the long-term impacts of their adoption. This latter case is discussed in detail above and illustrated in figure 7. A brief summary is sufficient here. The long-term impacts of eliminating marketing allotments and moving to a freely competitive U.S. market, as derived from theory, are (1) larger quantities would be sold in each of the domestic and foreign markets, (2) the price would be lower, (3) consumers in both domestic and foreign markets would be made better off, (4) holders of allotments would be made worse off, and (5) the net welfare change for world society is indeterminate.

REFERENCES

- Anderson, J. R., P. B. R. Hazell, and P. L. Scandizzo, "Considerations in Designing Stabilization Schemes," American Jour. Agric. Econ., Vol. 59:5, Dec. 1977, pp. 980-991.
- Gardner, Bruce, Optimal Stockpiling of Grain, Lexington, Mass., D.C. Heath, 1979.
- Hammig, Michael D., "Regional Acreage Response by Quarter for Fresh Tomatoes: An Example of the Use of Mixed Estimation," Southern Jour. Agric. Econ., December 1979, pp. 69-74.
- Hausman, Jerry A., "Exact Consumer's Surplus and Deadweight Loss," American Econ. Rev., Vol. 71:4, Sept. 1981, pp. 662-676.
- Hildreth, Clifford and G. J. Knowles, "Some Estimates of Farmers' Utility Functions," unpublished manuscript, Univ. Minn., 1981.
- Just, Richard E., "An Investigation of the Importance of Risk in Farmers' Decisions," American Jour. Agric. Econ., Vol. 56:1, Feb. 1974, pp. 14-25.
- _____, Econometric Analysis of Production Decisions With Government Intervention: The Case of the California Field Crops, Giannini Foundation Monograph No. 33, Univ. of Calif., Berkeley, June 1974.
- _____, "Risk Response Models and Their Use in Agricultural Policy Evaluation," American Jour. Agric. Econ., Vol. 57:5, Dec. 1975, pp. 836-43.
- Lin, William, "Measuring Aggregate Supply Response Under Instability," American Jour. Agric. Econ., Vol. 59:5, Dec. 1977, pp. 903-7.
- Anderson, J. R., P. B. R. Hazell, and P. L. Scandizzo, "Considerations in

Lin, William, G. W. Dean, and C. V.

Moore, "An Empirical Test of Utility
vs. Profit Maximization in
Agricultural Production," American
Jour. Agric. Econ., Vol. 56:3, Aug.
1974, pp. 487-508.

Officer, R. R., and A. N. Halter,

"Utility Analysis in a Practical
Setting," American Jour. Agric. Econ.,
Vol. 50:2, May 1968, pp. 257-277.

Turnovsky, Stephen J., "The Distribution
of Welfare Gains from Price Stabiliza-
tion: A Survey of Some Theoretical
Issues," in F. Gerard Adams and Sonia
A. Klein, eds., Stabilizing World
Commodity Markets. Lexington, Mass.:
Lexington Books, 1978, pp. 119-148.

Willig, Robert D., "Consumer's Surplus
Without Apology," American Econ. Rev.,
Vol. 66:4, Sept. 1976, pp. 589-597.

APPENDIX B

ANNOTATED BIBLIOGRAPHY

The material referenced below was used in appraising the economic effects of marketing orders for fruits and vegetables. The list should not be considered exhaustive; it is a selective sampling of research reports and other publications that deal with various aspects of order operations. Excluded are references in the more extensive literature of milk marketing orders.

Selected Fruit and Vegetable Marketing Order Studies, 1940-1981

<u>Author</u>	<u>Title and Publisher</u>	<u>Date</u>	<u>Orders Studied</u>	<u>Synopsis</u>
Booker, D.	"Statement to the U.S. Dept. of Agriculture Advisory Committee on Regulatory Programs, U.S. Dept. of Justice (mimeo)	1976	General	Asserts that marketing orders are anticompetitive (favor one group over another), increase consumer prices, lead to chronic overproduction, and restrict entry.
Breimyer, H. F.	Chp. 14 of <u>Individual Freedom and the Economic Organization of Agriculture</u> , University of Illinois Press	1965	General	Discusses philosophy of orders and nature of order constraints on individual decision-making. Argues that the effect of orders on consumers is positive.
Clodius, R. L.	"An Analysis of Statutory Market Control Programs in the California-Arizona Orange Industry," <u>Jrl. of Farm Econ.</u> 33:5.	1951	Oranges	Concludes that order administrative committees do not strive for short-run maximum returns for fear of promoting substitutes and because of heterogeneous interests among committee members.
Farmer Cooperative Service	<u>Price Impacts of Federal Market Order Programs</u> , Spec. Rept. 12, Farmer Cooperative Service, U.S. Dept. of Agriculture.	1975	General	Evaluates potential and actual price enhancement attributable to major order provisions. Orders identified as having price enhancing effects were hops, celery, walnuts, cranberries, prunes, raisins, tart cherries, Calif.-Ariz. navel oranges, valencia oranges, and lemons.
Farrell, K. E.	"Marketing Orders and Agreements in the U.S. Fruit and Vegetable Industries," in <u>Organization and Competition in the Fruit and Vegetable Industry</u> , Tech. Study #4 Nat. Comm. on Food Mktg.	1966	General	Theoretical discussion of supply control aspects of orders and description of how some exemplary orders work. Details why orders cannot, in general, lead to a monopoly situation. Defines conditions where orders are most effective, and marketing problems most effectively addressed by orders.
Foytik, J.	"Some Information Bearing on the Car Concentration Plan for California Tokay Grapes," Giannini Foundation of Agri-	1950	Tokay grapes	Statistical analysis of weekly prices and shipments; designed to be input into more comprehensive study of the order's effects. Concluded that restrictions on daily shipments

Selected Fruit and Vegetable Marketing Order Studies, 1940-1981--continued

<u>Author</u>	<u>Title and Publisher</u>	<u>Date</u>	<u>Orders Studied</u>	<u>Synopsis</u>
	cultural Economics, Univ. of California, unnumbered mimeo.			(prorates) reduced shipment variability, but shipping holidays increased shipment variability.
Foytik, J.	"Marketing Agreements: Fruits and Vegetables," in Benedict, M. and O. C. Stine, <u>The Agricultural Commodity Programs: Two Decades of Experience</u> , Twentieth Century Fund, New York.	1956	General	General description of order programs from enactment of AMAA to 1956. Concludes that orders increased producers' understanding of marketing, and that some had increased producer returns and stabilized markets.
Hamilton, H. G.	"Florida Citrus Agreement," <u>Jrl. of Farm Econ.</u> 31:4.	1949	Citrus	Outlines benefits of order: uniform high quality, exclusion of grades and sizes yielding negative returns to growers, development of needed statistics, education of growers on marketing conditions.
Hedlund, F. F.	"The Impact of Marketing Agreements Upon the Marketing of Fruits and Vegetables," <u>Jrl. of Farm Econ.</u> 32:4.	1950	General	Concludes that quality regulations have minimum impact. Quantity regulations have no effect if alternative market exists. Quantity controls slowed down picking and packing in California citrus, and also slowed adoption of aggressive sales programs. The information and statistics programs of orders are of major importance.
Hirsch, W. Z.	"Marketing Agreements and Cooperative Marketing: Some Comparative Aspects," <u>Jrl. of Farm Econ.</u> 32:1.	1950	General	Argues that cooperative marketing is less costly (from a consumer welfare perspective) means of achieving the same ends as marketing orders. Little unequivocal proof that orders benefit farmers or consumers.
Hoos, S.	"Economic Implications of California Agricultural Marketing Programs," <u>Jrl. of Farm Econ.</u> 38:5.	1956	General	Programs were good for counteracting cyclically depressed demand, especially in perennials, but were not successful in alleviating chronic surplus situations.

Selected Fruit and Vegetable Marketing Order Studies, 1940-1981--continued

<u>Author</u>	<u>Title and Publisher</u>	<u>Date</u>	<u>Orders Studied</u>	<u>Synopsis</u>
Hoos, S.	"Short-and Long-Run Economic Effects and Implications of Using National Marketing Orders as a Supply Management Tool," in <u>Rutgers Farm Policy Forum Proceedings</u> , Rutgers Univ.	1962	General	Quality control can stimulate demand by increasing consumer satisfaction and confidence. Outlines general conditions under which marketing orders are likely to be successful.
Hoos, S. and D. A. Clark, Jr.	"Impact of Marketing Orders and Agreements," <u>Farm Policy Forum</u> 10:1.	1957	General	Comments on the effects of orders on inter-regional competition. Volume controls for California asparagus caused the State to lose market share. Order-funded promotion for pears expanded California sales relative to other areas. California lemon order induced Florida production.
Hoos, S.	"Marketing Orders and Agreements," <u>Farm Policy Forum</u> 16:1.	1963	General	Argues that orders "are not doing the job often attributed to them." Orders have not solved problems associated with chronic surplus situations. "Thus one should look with caution upon anyone offering marketing orders as a cure-all for any type of marketing problem. At the same time, one should look with suspicion at anyone who condemns all marketing orders."
Jamison, J. A.	"Marketing Orders, Cartels, and Cling Peaches," <u>Food Research Institute Studies</u> 6:2.	1966	Cling Peaches	Order costs: Encouraged excess production, excess capacity, and overinvestment. Resulted in self-defeating order surplus removal program. Order benefits: Developed economic literacy, facilitated advertising, increased quality and amount of information.
Jamison, J. A.	"Marketing Orders and Public Policy for the Fruit and Vegetable Industries," <u>Food Research Institute Studies</u> 10:3.	1971	Cling Peaches Pears Lemons Walnuts Almonds	Found long-run gains (price) to "controlled" commodities did not differ greatly from those accruing to uncontrolled commodities. Order price effect is to cut price troughs relative to price peaks. Costs of orders: high cost of resource misallocation; abridgment of individual

Selected Fruit and Vegetable Marketing Order Studies, 1940-1981--continued

<u>Author</u>	<u>Title and Publisher</u>	<u>Date</u>	<u>Orders Studied</u>	<u>Synopsis</u>
				freedom; accelerates firm entry and slows exit. Suggests that restricted percentages be gradually reduced or volume controls prohibited from being used for two successive years.
Jesse, E. V.	"Producer Revenue Effects of Federal Marketing Order Quality Standards," Econ. and Stat. Serv., U.S. Dept. of Agriculture, ESS Staff Report No. AGESS810619.	1981	Quality Control Orders	Attempted to separate demand-increasing and supply-decreasing effects of order-imposed minimum quality standards. Estimated a positive relationship between minimum quality and demand in only 4 of 17 order commodities studied. Demand elasticity in the vicinity of "normal" production indicated higher standards could elevate producer returns during large crop years.
Jesse, E. V.	<u>Social Welfare Implications of Federal Marketing Orders for Fruits and Vegetables</u> , Tech. Bull. No. 1608, Econ., Stat., and Coop. Serv., U.S. Dept. of Agriculture.	1979	General	Evaluated consumer surplus and producer gross return effects of terminating various provisions in Federal orders. Identified information required to draw conclusions about net welfare gains and losses in the short and long run.
Jesse, E. V. and A. C. Johnson, Jr.	<u>Effectiveness of Federal Marketing Orders for Fruits and Vegetables</u> , Ag. Econ. Rept. No. 471, Econ. and Stat. Serv., U.S. Dept. of Agriculture.	1981	General	Compared farm price levels and price variability for commodities with and without marketing orders. Ranked orders by potential market power conferred. Found limited statistical evidence that order commodity prices were higher (absolutely or as a percent of parity) or more stable than matched non-order counterparts. No discernible relationship between potential market power and actual price performance.
Masson, A.	"The Economic Effects of Marketing Orders," Appendix to Part IV, <u>A Report on Agricultural Cooperatives</u> , Bur. of Comp., Fed. Trade Comm. (Mimeo)	1975	General	Identifies anticompetitive effects of marketing orders, including barring entry, limiting imports, and price discrimination. Argues that orders have caused high resource misallocation costs and enhanced prices to consumers. Resources are wasted and interregional competition stagnated. Orders underlie monopoly power of agricultural cooperatives.

Selected Fruit and Vegetable Marketing Order Studies, 1940-1981--continued

<u>Author</u>	<u>Title and Publisher</u>	<u>Date</u>	<u>Orders Studied</u>	<u>Synopsis</u>
Masson, A.	"Statement to the U.S.D.A. Advisory Committee on Regulatory Programs on Citrus Marketing Orders, Bur. of Econ., Fed. Trade Comm.	1976	California-Arizona Oranges and Lemons	Costs of citrus orders: higher fresh fruit prices, abnormally long season, restricted fresh shipments, resource misallocation, excess profits to growers, price competition eradicated.
Masson, A., R. T. Masson, and B. C. Harris	"Cooperatives and Marketing Orders," in Marion, B. W., <u>Agricultural Cooperatives and the Public Interest</u> . N.C. Project 117, Mono. No. 4.	1978	General	Argues that marketing orders are subject to manipulation by cooperatives. Derive social costs of lemon order. Deny stability benefits of orders; "...to some extent the claims about stabilization benefits are rote claims to make an income-enhancing program more politically desirable."
Merchant, C. S.	"Maine Potato Marketing Agreement and Order," <u>Jrl. of Farm Econ.</u> 31:4.	1949	Maine Potatoes	Desirable features of orders; uniform sizes, elimination of small sizes. Undesirable features; "crowding" the tolerances, added inspection costs, limited outlets for eliminated potatoes, no consumer representation.
Minami, D. D., B. C. French and G. A. King	<u>An Econometric Analysis of Market Control in the California Cling Peach Industry</u> , Giannini Fdn. Mono. No. 39, Univ. of California.	1979	Cling Peaches	Simulated market performance without order. Concluded that order raised grower returns and reduced price variability, but in so doing, reduced consumer surplus by a greater amount than gains in economic rent to producers. Illustrates how orders can compound production adjustment problems.
Nelson, G. and T. H. Robinson	"Retail and Wholesale Demand and Marketing Order Policy for Fresh Navel Oranges," <u>Am. Jrl. of Agr. Econ.</u> 60:3.	1978	Navel oranges	Estimated monthly demand for navel oranges. Concluded that administrative committee decisions to restrict fresh shipments may have reduced producer returns relative to unrestricted shipping, since demand (at handler level) was estimated to be elastic. Committee response to 1974 Cost of Living Council efforts to increase weekly prorates was inconsistent with grower profit maximization objective.

Selected Fruit and Vegetable Marketing Order Studies, 1940-1981--continued

<u>Author</u>	<u>Title and Publisher</u>	<u>Date</u>	<u>Orders Studied</u>	<u>Synopsis</u>
Price, D. W.	<u>The Marketing Order for Washington Apricots</u> , Tech. Bull. No. 56, Wash. Agr. Exp. Sta.	1967	Apricots	Estimates elastic demand for apricots, meaning that demand-enhancing effect of minimum quality standards must exceed supply-decreasing effect for producer revenue to be positively affected by use of standards. Benefit of order is the provision of "a forum and stimulus for a discussion of the problems of marketing Washington Apricots."
Price, D. W.	<u>The Washington Sweet Cherry Industry and Its Marketing Order</u> , Bull. No. 701, Wash. Agr. Exp. Sta.	1968	Sweet Cherries	Unsuccessfully attempts to determine if quality-related demand increases due to order quality standards more than offset revenue reductions attributable to an elastic demand for sweet cherries. Identifies major benefit of order as elimination of "double-faced pack" through pack standardization provision.
Pritchard, N. T.	<u>The Federal Raisin Marketing Order</u> , ERS-198, Econ. Res. Serv., U.S. Dept. of Agriculture.	1964	Raisins	Examines effect of first 10 years operation of the Raisin marketing order. Order increased and stabilized farm prices relative to pre-order periods.
Shafer, C. E.	"The Effect of a Marketing Order on Winter Carrot Prices," <u>Am. Jrl. of Agr. Econ.</u> 50:4.	1968	Carrots	Employed a dummy variable in time series analysis to capture effect of marketing order on demand for winter carrots from Texas. Concludes that order reduced the price spread between retail and grower levels, but did not affect demand above the grower level.
Smith, R. J.	"The Lemon Prorate in the Long Run," <u>Jrl. of Pol. Economy</u> , Dec. 1961.	1961	Lemons	Argues that grower returns for lemons (per carton) in the long run have not been increased by use of the lemon marketing order. Order has the self-destructive effect of subsidizing lemon juice, which is competitive with fresh lemons.

Selected Fruit and Vegetable Marketing Order Studies, 1940-1981--continued

<u>Author</u>	<u>Title and Publisher</u>	<u>Date</u>	<u>Orders Studied</u>	<u>Synopsis</u>
Thor, P. K.	<u>An Econometric Analysis of the Marketing Orders for the California-Arizona Orange Industry</u> , Unpubl. Ph.D. Thesis, Univ. of California, Davis.	1980	Navel and Valencia Oranges	Employs weekly simulation model to estimate short- and long-run effects of terminating order. Short-run effects include substantially lower and more volatile grower returns as more fruit is sold fresh. In the long run, fresh prices and shipments are about the same as with the orders in effect, as is price variability. Other long-run effects include reduced season lengths and a major contraction of the processing sector with diminished production for processing.
Townsend-Zellner, N.	"The Effect of Marketing Orders on Market Structures and Some Consequent Market Developments," <u>Jrl. of Farm Econ.</u> 43:5.	1961	General	<p>Outlines structural effects of marketing orders:</p> <ul style="list-style-type: none"> -producers gain market power <u>vis-a-vis</u> handlers. -degree of knowledge increased. -increased product differentiation. -increased market power of cooperatives.